Final

Programmatic Environmental Assessment of Modularization of Army National Guard Forces

Prepared by

National Guard Bureau

and

US Army Corps of Engineers,
Mobile District

with Technical Assistance from

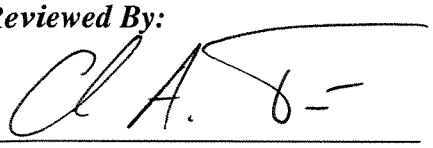
Tetra Tech, Inc.
Fairfax, VA 22030

May 2005

Programmatic Environmental Assessment of Modularization of Army National Guard Forces

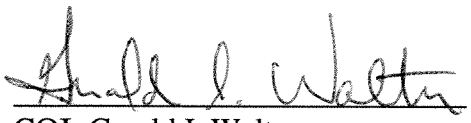
Lead Agency: National Guard Bureau
***Cooperating Agencies*:** None
Title of Proposed Action: Programmatic Environmental Assessment of Modularization of Army National Guard Forces
Affected Jurisdictions: Various
Point of Contact: Major Christopher Tatian, National Guard Bureau, Army National Guard Readiness Center, 111 South George Mason Drive, Arlington, VA 22204-1383
Proponent: Army National Guard Bureau
Document Designation: Programmatic Environmental Assessment

Reviewed By:



MAJ Christopher A. Tatian, R.E.M.
National Environmental Policy Act
Team Leader, NGB

Approved By:



COL Gerald I. Walter
Chief, Environmental Programs Division, NGB

Abstract: This Programmatic Environmental Assessment (PEA) addresses the National Guard Bureau's proposal to modularize Army National Guard forces at various locations. The purpose of the proposed action is to reorganize combat forces into units whose structure, equipment, and training comply with the evolving requirements of the ARNG Campaign Plan. The proposed action is needed to improve the ability of the Nation to respond rapidly to the challenges of the 21st century. The PEA analyzes potential effects of the proposed action and a no action alternative. Implementation of the proposed action would result in long-term minor beneficial effects on the noise environment, water resources, geology and soils, and biological resources. The no action alternative would result in no new effects on environmental resources and conditions. None of the expected impacts evaluated in the PEA would be significant, and issuance of a Finding of No Significant Impact is appropriate.

Executive Summary

BACKGROUND

This programmatic environmental assessment (PEA) evaluates the proposal of the National Guard Bureau (NGB) to transform Army National Guard (ARNG) forces to modular organizations.

In March 2002 the Army published the *Programmatic Environmental Impact Statement for Army Transformation* (the "Army Transformation PEIS") for its proposal to conduct a multiyear, phased, and synchronized program of transformation. Over a 30-year period, the Army will conduct a series of transformation activities affecting virtually all aspects of Army doctrine, training, leader development, organizations, installations, materiel, and soldiers. In April 2002 the Army issued a Record of Decision reflecting its intent to transform the Army. This PEA evaluates a proposed action by the NGB that is part of the transformation process designed to provide the Nation with combat forces that are more responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

PROPOSED ACTION

Consistent with guidance contained in the ARNG Campaign Plan, over the next 4 years the NGB proposes to convert the force structure and equipment of all ARNG combat brigades to "modular" brigade combat team units of action (BCT(UA)s). The proposed action would involve the transfer of authorizations for two brigades to the Active Component and the in-place conversion of all remaining combat brigades. At the completion of this portion of the proposed action, there would be 10 Heavy BCT(UA)s and 23 Infantry BCT(UA)s.[1] Also as part of the proposed action, the eight division headquarters within the ARNG would be reorganized to create modular units of employment (UEs) to provide command and control of organic, assigned, and attached forces. Finally, ARNG Combat Service and Combat Service Support personnel and equipment would be reorganized into various types of support units of action (SUAs).

PURPOSE AND NEED

The proposed action is needed to reorganize combat forces into units whose structure, equipment, and training comport with the evolving requirements of the ARNG Campaign Plan.

The need for the proposed action is to improve the ability of the Nation to respond rapidly to the challenges of the 21st century. Restructuring of ARNG organizations is needed to create forces that are more stand-alone and alike ("modular") while retaining their broad-spectrum capability. As a significant part of the Reserve Component and in the same way the Active Component is changing, the NGB needs to change ARNG forces in order to:

[1] Transformation of the 56th Stryker Brigade Combat Team is proceeding independently and is not a part of this proposal.

- Create a larger pool of units to fulfill strategic commitments.
- Standardize combat unit designs.
- Make units more adaptable to the range of missions—from peacekeeping to war.
- Move from division-level (larger) to brigade-level (smaller) stand-alone units.
- Make units capable of deploying more rapidly.
- Improve the Army's ability to tailor units and integrate them among components and with other Services and nations.

ALTERNATIVES

The NGB considered two alternatives to the proposed action.

- *Non-modular Structure.* Under the ARNG Campaign Plan, which carries out actions set in motion in the Army's Campaign Plan, the NGB is tasked to restructure certain forces into modular units of designated sizes having specified capabilities and weapons systems and other equipment. Deviation from the general precepts and specific requirements of Headquarters, Department of the Army directives would jeopardize the Army's implementation of its transformation program. In this light, this alternative was found to be infeasible, and it was not evaluated in detail in the PEA.
- *Partial Reorganization of ARNG Forces.* Under this alternative, the NGB would direct modularization of only portions of ARNG forces; the remaining portions of ARNG forces would retain their historical division-centric structural design. Because implementation of such an alternative was found to present three serious drawbacks, it was deemed infeasible and, accordingly, was not evaluated in detail in the PEA.

Consistent with guidance issued by the Council on Environmental Quality, the PEA evaluates the no action alternative.

ENVIRONMENTAL CONSEQUENCES

The PEA considers potential effects on real property, air quality, noise, water resources, geology and soils, biological resources, cultural resources, hazardous materials and hazardous wastes, and socioeconomics (including environmental justice and protection of children). Effects would occur as a result of weapons systems and equipment use, training, and institutional matters. Implementation of the proposed action would result in no expected effects on most of the resources evaluated. Effects would be expected on four types of resources, as discussed in the following.

- *Effects on the noise environment.* Long-term minor beneficial effects would be expected. Elimination of more than half of the ARNG organizations' tracked

vehicles would reduce the number of heavy, noisy vehicles with respect to both engine noise and organic weapons (the Abrams tank operates with a 120-mm smooth-bore cannon, and the Bradley Infantry Fighting Vehicle operates with a 25-mm chain gun and the TOW antitank missile). Plans for types and quantities of vehicles in the infantry brigades have not been finalized; operations involving Humvees and medium trucks would offset some of the noise reductions attributable to elimination of tanks and other tracked vehicles. Additional changes in the quantities of noise-producing weapons systems would also occur. Numerous personnel in units currently equipped with various towed artillery and air defense weapons systems would be transferred and retrained for duties in other types of units.

- *Effects on water resources.* Long-term minor beneficial effects would be expected. The reduction of the number of tracked vehicles by more than 50 percent would provide a long-term minor indirect benefit to surface water quality. When operated off-road, tracked vehicles tend to crush vegetation and compact soil, thus affecting the ability of vegetative cover to slow the conveyance of precipitation to surface waters. If there were less harm to vegetation and soils, there would be less sedimentation of surface waters.

- *Effects on geology and soils.* Elimination of more than half of the tanks, Bradley Fighting Vehicles, and armored personnel carriers now fielded to ARNG organizations would result in a beneficial reduction of effects on soils. This outcome would be more pronounced at installations that have soils susceptible to erosion. Relevant characteristics of vehicles are compared in Table 3-1 in Section 3.6.2.

- *Effects on biological resources.* Long-term minor beneficial effects would be expected. Elimination of numerous tracked vehicles fielded to ARNG organizations would result in a beneficial reduction of effects on vegetation. These benefits would be more noticeable at training facilities in dry climates, where shorter growing seasons tend to feature more fragile vegetation than that in wetter climates and climates with longer growing seasons.

Under the no action alternative, no effects would be expected.

No cumulative effects are identified.

MITIGATION

Because no adverse effects are expected upon implementation of the proposed action, no specific mitigation actions are recommended. To guard against the development of circumstances that could in limited cases result in site-specific adverse effects, the NGB and ARNG organizations should maintain their stewardship posture by implementing best management practices designed to safeguard environmental resources.

CONCLUSIONS

Analyses in the PEA show that implementation of the proposed action would not result in significant environmental or socioeconomic effects. Issuance of a Finding of No Significant Impact would be appropriate, and an Environmental Impact Statement need not be prepared before implementation of the proposed action.

Table of Contents

TABLES

APPENDICES

ACRONYMS AND ABBREVIATIONS

Programmatic Environmental Assessment of Modularization of Army National Guard Forces

1.0 PURPOSE, NEED, AND SCOPE

1.1 INTRODUCTION

This programmatic environmental assessment (PEA) evaluates the proposal of the National Guard Bureau (NGB) to transform Army National Guard (ARNG) forces to modular organizations.

In October 1999 the Secretary of the Army and the Chief of Staff of the Army articulated a vision about people, readiness, and transformation of the Army to meet challenges emerging in the 21st century and the need to be able to respond more rapidly to different types of operations requiring military action. The strategic significance of land forces continues to lie in their ability to fight and win the Nation's wars and in their providing options to shape the global environment to the benefit of the United States and its allies. Transformation addresses the Army's need to become more strategically responsive and dominant at every point on the spectrum of operations.

In March 2002 the Army published the *Programmatic Environmental Impact Statement for Army Transformation* (the "Army Transformation PEIS") for its proposal to conduct a multiyear, phased, and synchronized program of transformation. Over a 30-year period, the Army will conduct a series of transformation activities affecting virtually all aspects of Army doctrine, training, leader development, organizations, installations, materiel, and soldiers. In April 2002 the Army issued a Record of Decision reflecting its intent to transform the Army. This PEA evaluates a proposed action by the NGB that is part of the transformation process designed to provide the Nation with combat forces that are more responsive, deployable, agile, versatile, lethal, survivable, and sustainable.

Consistent with guidance contained in the Army National Guard Campaign Plan, over the next 4 years the NGB proposes to convert the force structure and equipment of all ARNG combat brigades to "modular" brigade combat team units of action (BCT(UA)s). The proposed action would involve the transfer of authorizations for two brigades to the Active Component and the in-place conversion of all remaining combat brigades. At the completion of this portion of the proposed action, there would be 10 Heavy BCT(UA)s and 23 Infantry BCT(UA)s.[2] Also as part of the proposed action, the eight division headquarters within the ARNG would be reorganized to create modular units of employment (UEs) to provide command and control of organic, assigned, and attached forces. Finally, ARNG Combat Service and Combat Service Support personnel and equipment would be reorganized into various types of support units of action (SUAs). Details of the proposed action are provided in Section 2.0.

[2] Transformation of the 56th Stryker Brigade Combat Team is proceeding independently and is not a part of this proposal.

1.2 PURPOSE AND NEED

The purpose of the proposed action is to reorganize combat forces into units whose structure, equipment, and training comport with the evolving requirements of the ARNG Campaign Plan.

The need for the proposed action is to improve the ability of the Nation to respond rapidly to the challenges of the 21st century. ARNG organizations are legally bound to defend the United States and its territories, support national policies and objectives, and defeat nations responsible for aggression that endangers the peace and security of the United States. To carry out these tasks, the ARNG must adapt to changing world conditions and must improve its capabilities to respond to a variety of circumstances across the full spectrum of military operations. Recent events have shown that the ARNG cannot merely be prepared to fight the next war as it fought previous wars.

Warfighting doctrine continues to evolve. Heavy, massed forces that require months to put in place cannot optimally respond to opponents that employ means of warfare intended to offset the greater capabilities of the United States. Getting into an operational theater in a timely fashion—to shape events or to act predominantly as circumstances dictate—would be enhanced through the creation of forces that can be built specifically for major tasks at hand. It is expected that future military operations may more frequently require forces capable of conducting joint, multinational, and interagency missions. Planning for and conducting such operations, undertaken with an expeditionary mindset, will require more cohesive, combat-ready formations that are more agile and can be easily tailored for a wide array of circumstances.

Restructuring of ARNG organizations is needed to create forces that are more stand-alone and alike ("modular") while retaining their broad-spectrum capability. As a significant part of the Reserve Component and in the same way the Active Component is changing, the NGB needs to change ARNG forces in order to:

- Create a larger pool of units to fulfill strategic commitments.
- Standardize combat unit designs.
- Make units more adaptable to the range of missions—from peacekeeping to war.
- Move from division-level (larger) to brigade-level (smaller) stand-alone units.
- Make units capable of deploying more rapidly.
- Improve the Army's ability to tailor units and integrate them among components and with other Services and nations.

Present Army doctrine recognizes the division as the principal deployable unit. The Army's operating forces consist mainly of 10 divisions in the Active Component, 8 divisions in the Reserve Component, and 2 integrated divisions (each consisting of an Active Component headquarters and 3 Reserve Component maneuver brigades). To

enable commanders' rapid task organization of forces, without resort to deployment of an entire division, the Army needs to transform units in a standardized manner (modularity) and to increase the overall number of brigades. Achieving modularity in both the Active Component and the Reserve Component would enable commanders to select from more than 80 brigades to obtain mission-specific capabilities without deploying an entire division.

1.3 SCOPE

This PEA has been developed in accordance with the National Environmental Policy Act (NEPA) and implementing regulations issued by the President's Council on Environmental Quality (CEQ) and the Army.[3] Its purpose is to inform decisionmakers and the public of the likely environmental consequences of the proposed action and alternatives.

This PEA identifies, documents, and evaluates, on a programmatic level, the effects of reorganizing ARNG forces into modular headquarters organizations and brigades. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing conditions and has identified relevant beneficial and adverse effects associated with the action. The proposed action and alternatives, including the no action alternative, are described in Section 2.0. Conditions existing as of 2004, considered to be the "baseline" conditions, are described in Section 3.0, Affected Environment and Environmental Consequences. The expected effects of the proposed action, also described in Section 3.0, are presented immediately following the description of baseline conditions for each environmental resource addressed in the PEA. Section 3.0 also addresses the potential for cumulative effects, and mitigation measures are identified where appropriate.

A PEA evaluates a proposed action in broad terms. It lays the foundation for subsequent analyses and decisionmaking. PEAs are intended to eliminate repetitive discussions of the same issues and focus on the key issues at each level of project review. In this document, the NGB addresses potential environmental effects of transforming its forces to modular units on a broad, programmatic scale. ARNG organizations will conduct additional analyses, as appropriate, to address site-specific effects. Although in some instances preparation of an environmental assessment (EA) might be deemed appropriate, the NGB anticipates that ARNG organizations will find preparation of Records of Environmental Consideration (RECs) to be the most appropriate course of action pursuant to 32 CFR Part 651 (*Environmental Analysis of Army Actions*), which states the following:

- "If the proposed action is adequately covered within an existing EA or EIS [environmental impact statement], a REC is prepared to that effect. The REC should state the applicable EA or EIS title and date, and identify where it may be

[3] Council on Environmental Quality *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*, Title 40 *Code of Federal Regulations* (CFR) Parts 1500–1508, and *Environmental Analysis of Army Actions*, 32 CFR Part 651.

reviewed. The REC is then attached to the proponent's record copy of that EA or EIS." 32 CFR 651.12(a)(2)

- "A Record of Environmental Consideration (REC) is a signed statement submitted with project documentation that briefly documents that an Army action has received environmental review. RECs are prepared … for actions covered by existing or previous NEPA documentation. A REC briefly describes the proposed action and timeframe, identifies the proponent and approving official(s), and clearly shows how an action … is already covered in an existing EA… ." 32 CFR 651.19

The proposal to create modular forces continues the Army's ongoing transformation program.[4] The description of the proposed action presented in this PEA is based on the NGB's present understanding of circumstances attending development of Army doctrine and NGB implementation of organizational structure changes to comport with that doctrine. Army doctrine, training, leader development, organizations, installations, materiel, and soldiers are inseparable; changes in one area inevitably affect other areas. Changes and refinements to existing doctrine and the organization of forces are complex. Information currently known concerning the proposed action is adequate to proceed with evaluation of potential environmental effects, with the understanding that at the time of implementation there might be a limited number of minor, "on the ground" adjustments. If future requirements should result in impacts beyond those foreseen in this analysis, the NGB or local ARNG organizations will undertake additional measures, as appropriate, to comply with NEPA. Any additional environmental impacts analyses will comport with 32 CFR Part 651 (*Environmental Analysis of Army Actions*) and current ARNG policy. Proponents may prepare environmental impact statements, environmental assessments, or records of environmental consideration based on the nature of their proposed actions and the likelihood of occurrence and nature of environmental impacts.

1.4 METHODOLOGY

This PEA uses an analytic methodology similar to that used in the Army Transformation PEIS. To provide useful information on potential environmental effects for transformation planners, as well as to meet the requirements of law, the Army Transformation PEIS identified several types of activities likely to produce impacts. These clusters of related actions, referred to as "activity groups," served as the elements to be evaluated. Analysis in the Army Transformation PEIS postulated activities generically (and specifically, where possible) against a nonspecific resource base (affected environment) representing environmental resources and conditions that might be affected by Army actions. This approach identified risks and effects so that they could be documented, mitigated where possible, and addressed in detail in subsequent site- and project-specific NEPA analyses.

[4] Additional information on transformation can be obtained from the *Programmatic Environmental Impact Statement for Army Transformation*, (March 2002) and the related Record of Decision (April 2002). These documents are available at http://notes.tetratech-ffx.com/army_transformation_PEIS/tcppeis.htm.

The Army Transformation PEIS identified seven activity groups: systems acquisition, construction, land transactions, deployment, stationing, training, and institutional matters. Three activity groups were found appropriate for analysis in this PEA, and four were found not appropriate for analysis.

The activity groups appropriate for analysis are:

- *Weapons systems and equipment.* In general, development, testing, production, fielding (distribution to units), operational use, and disposal of weapons systems and equipment can affect environmental resources. As a general matter, ARNG organizations do not participate in any of the foregoing functions except training and operational use of weapons systems and equipment. Systems capable of producing environmental effects include weaponry (e.g., the M1A1 Abrams tank, the M2 and M3 Bradley Infantry and Cavalry Fighting Vehicles, the AH-64 Apache helicopter) and the Army's various families of vehicles. Weapons systems and equipment are addressed in this PEA because effects associated with their use can be expected to arise in a variety of contexts.

- *Training.* Achieving and maintaining readiness to perform assigned missions requires training. Army doctrine for individual and unit ("collective") training is based on mission essential task lists. These lists identify the tasks in which individuals and units must be proficient to perform their assigned missions. Following basic training given to all new Active Component and Reserve Component personnel, initial training of individuals in their military occupational specialties typically occurs at Army formal schools. For Reserve Component personnel, subsequent individual training and unit training occur primarily at organizational armories, maintenance shops, major training areas, and other training sites throughout the various states and at Active Component installations. Major collective training for ARNG maneuver brigades occurs at the National Training Center at Fort Irwin, California, and at the Joint Readiness Training Center at Fort Polk, Louisiana. Potential environmental effects associated with training are evaluated in detail in this PEA because of their relevance to the proposed action and the likelihood of their occurrence.

- *Institutional matters.* An entire range of diverse day-to-day activities not otherwise specifically accounted for in the preceding groups is referred to as "institutional matters." These include the Army's continuous examination and refinement of concepts, doctrine, and strategic plans for use of forces in joint service, interagency, and multinational operations; sustainment of forces; personnel actions (recruiting, retention, and assignment); and budgeting. Institutional matters also include the various programs and actions the NGB and ARNG organizations implement in fulfilling their environmental stewardship roles. This activity group is evaluated in this PEA, especially in light of the widespread efforts of the ARNG to take positive actions in its environmental stewardship role.

The activity groups not appropriate for analysis are:

- *Construction.* Construction and demolition of all types of facilities (buildings, training facilities such as multipurpose ranges, and infrastructure) can affect environmental resources. The NGB's proposal to modularize ARNG forces does not include specific proposals for construction of facilities. Accordingly, activities related to construction and demolition are not evaluated in this PEA. If local implementation of modularity were to include construction of facilities, the local ARNG organization would be expected to provide appropriate evaluation of site-specific effects.

- *Land transactions.* Acquisition, management, and disposal actions concerning real property might signal changes leading to effects on environmental resources. Acquisition involves gaining temporary or permanent control of property for military use; in many instances, it results in lands being put to new or different uses. Most land acquisitions occur through purchase, lease, or permit. Asset management refers to the granting of leases, licenses, easements, or permits to others. Such grants vary in duration. Divestiture of right, title, or interest in land ("disposal") occurs when an organization no longer requires the use of real property assets. The NGB's proposal to modularize existing brigades does not include specific proposals for real property transactions. Accordingly, transactions related to real property actions are not evaluated in this PEA. If local implementation of modularity were to include proposals for acquisition, management, or disposal of real property, local ARNG organizations would be expected to provide appropriate evaluation of site-specific effects.

- *Deployment.* This activity group involves operational deployment of forces, as well as training that is specifically tied to deployment of forces, which could produce environmental effects. Operational deployments and realistic training for deployment are characterized by intense, highly focused activities occurring in compressed time frames, typically at or near installations that serve as power projection platforms. Because modularization of ARNG forces would not affect such operational events or training, this activity group is not evaluated in detail in this PEA.

- *Stationing.* Distribution of ARNG forces among the states, territories, and District of Columbia is based on numerous historical and practical considerations. The NGB's proposal for modularizing forces is predicated on "in-place" conversions of units. That is, there would be no permanent change-of-station reassignments of personnel from one location to another. Accordingly, this activity group is not evaluated in this PEA.

1.5 DECISION TO BE MADE

The decision to be made is whether, having taken potential environmental effects into account, the NGB should transform its forces into modular units and, as appropriate, carry out mitigation measures that would reduce effects on resources. The decision to

modularize maneuver brigades and other organizations would be based on strategic, operational, environmental, and other considerations, including the results of this analysis. In light of budgetary costs, training requirements, and the number of brigades that would be affected, it is predicted that the conversion process would occur over a period of 4 years.

1.6 PUBLIC INVOLVEMENT

The NGB invites public participation in the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decisionmaking. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decisionmaking process.

Public participation opportunities with respect to the proposed action and this PEA are guided by the provisions of 32 CFR Part 651 and by guidance issued by the NGB. Following announcement of the PEA's availability, the NGB will make the PEA available for 30 days for public comment on the draft stage of preparation. Upon completion, the final PEA and a draft Finding of No Significant Impact (FNSI), if appropriate, will be made available for an additional 30-day comment period, during which time the NGB will consider any further comments submitted by agencies, organizations, or members of the public on the proposed action, final PEA, or draft FNSI. At the conclusion of the final review period, the NGB may, if appropriate, execute a final FNSI and proceed with the proposed action. If it is determined prior to issuance of a final FNSI that implementation of the proposed action would result in significant impacts, the NGB will publish in the *Federal Register* a notice of intent to prepare an environmental impact statement, commit to mitigation actions sufficient to reduce impacts below significance thresholds, or not take the action.

Throughout this process, the public may obtain information on the status and progress of the proposed action and the PEA through the NGB Public Affairs Office, by calling 703-607-2584.

1.7 KEY TERMS

The Army is a large and highly complex institution that has developed its own lexicon. For the benefit of readers who might be unfamiliar with Army doctrine and organization, explanations of key terms are provided in Appendix A.

1.8 REGULATORY FRAMEWORK

A decision on whether to proceed with the proposed action rests on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the NGB is guided by relevant statutes (and their implementing regulations) and Executive Orders that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act, Clean Water Act, Noise Control Act, Endangered Species Act, National Historic Preservation Act, Archaeological Resources

Act, Resource Conservation and Recovery Act, and Toxic Substances Control Act. Executive Orders bearing on the proposed action include EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), EO 12114 (*Environmental Effects Abroad of Major Federal Actions*), EO 12580 (*Superfund Implementation*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13007 (*Sacred Indian Sites*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13101 (*Greening the Government Through Waste Prevention, Recycling, and Federal Acquisition*), EO 13123 (*Greening the Government Through Efficient Energy Management*), EO 13134 (*Developing and Promoting Biobased Products and Bioenergy*), EO 13148 (*Greening the Government Through Leadership in Environmental Management*), EO 13149 (*Greening the Government Through Federal Fleet and Transportation Efficiency*), EO 13175 (*Consultation and Coordination with Indian Tribal Governments*), and EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*). These authorities are addressed in various sections throughout this PEA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at http://www.denix.osd.mil.

2.0 PROPOSED ACTION AND ALTERNATIVES

Consistent with guidance contained in the ARNG Campaign Plan, the NGB proposes to reorganize its forces into modular organizations over the next 4 years. Conversions of units, occurring in place where ARNG organizations are now located, would result in a force that is more "brigade-centric." This section presents information on the proposed action and alternatives. The no action alternative is presented in Section 2.1 in order to describe present circumstances; that is, the array of today's ARNG forces that would be affected by the proposed action. A description of the proposed action follows in Section 2.2. Finally, Section 2.3 discusses alternatives to the proposed action. The proposed action set forth in Section 2.2 is the NGB's preferred alternative.

2.1 NO ACTION ALTERNATIVE

Under the no action alternative, the NGB would not transform ARNG combat brigades and other forces to a modular structure. The divisions, separate enhanced brigades, and other separate brigades of the ARNG would retain their present structure. However, incremental changes in Army doctrine, equipment, distribution of forces, and other matters might change, on an independent basis, as circumstances dictate. Failure to implement a program to transform ARNG forces could impair the Nation's abilities to respond to strategic requirements in a timely and fully successful fashion. Failure to develop in a timely manner forces capable of successfully meeting all types of challenges could jeopardize national security interests. The following identifies the missions, organizational concepts, and other relevant facets that characterize today's ARNG forces.

Mission. The ARNG is structured across 50 states, 3 territories, and the District of Columbia. During national emergencies, the President may mobilize the ARNG to federal status. The ARNG's federal mission is to maintain properly trained and equipped units available for prompt mobilization for war or national emergency or as otherwise needed. The ARNG also plays a state role, and each state governor serves as the commander-in-chief. Adjutants General are responsible for training and readiness. At the state level, the governors reserve the ability under the constitution to call up members of the ARNG in times of domestic emergencies. The ARNG's state mission is perhaps the best known because time and time again the Guard has responded to help battle fires, floods, tornadoes, and hurricanes.

In September 2000 the Chief of Staff of the Army announced the alignment of the eight ARNG divisions with the four Army corps: 40th Infantry Division (California) is aligned with I Corps at Fort Lewis, Washington; 34th Infantry Division (Minnesota), 38th Infantry Division (Indiana), and 49th Armored Division (recently reflagged as the 36th Infantry Division) (Texas) are aligned with III Corps at Fort Hood, Texas; 28th Infantry Division (Pennsylvania), 29th Infantry Division (Virginia), and 42nd Infantry Division (New York) are aligned with XVIII Corps at Fort Bragg, North Carolina; and 35th Infantry Division (Kansas) is aligned with V Corps in Heidelberg, Germany. By assuming the mission orientation of the aligned corps, the ARNG divisions achieve greater training and geographic focus.

Current concept of organization. Today's ARNG forces are division-centric. They are organized, equipped, and trained to conduct combat operations on a division basis.

Each ARNG division consists principally of two types of elements: maneuver brigades and supporting organizations. Separate brigades, groups, and battalions that report to the division provide various kinds of support to the division itself and to the maneuver brigades. Thus, a division typically contains three maneuver combat brigades, division artillery, an aviation brigade, an engineer brigade, and a division support command (consisting primarily of transportation, maintenance, and medical resources).

Brigades are organizations that control two or more battalions. Their capabilities for self-support and independent action vary considerably with the type of brigade. Maneuver brigades are the major combat units of all types of divisions. They can also be organized as separate units. Although separate brigades have a fixed organization, division commanders establish the organization of their brigades and change their organizations as frequently as necessary for mission accomplishment. The only permanent unit assigned to a brigade is its headquarters and headquarters company (HHC). Brigades may employ any combination of maneuver battalions; they are normally supported by field artillery battalions, by aviation units, and by smaller Combat, Combat Support, and Combat Service Support units. Brigades combine the efforts of their battalions and companies to fight engagements and to perform major tactical tasks in division battles.

ARNG forces currently comprise elements of Combat Arms, Combat Support, and Combat Service Support branches and functions.

- *Combat Arms Forces* close with and destroy enemy forces or provide firepower and destructive capabilities on the battlefield. The branches and functions included are Air Defense Artillery, Armor/Cavalry, Aviation, Field Artillery, Infantry, and Special Forces.

- *Combat Support Forces* provide critical combat functions in conjunction with combat arms units and soldiers. The branches and functions included are Chemical Corps, Civil Affairs, Psychological Operations, Military Intelligence, Military Police Corps, Signal Corps, and Engineers.

- *Combat Service Support Forces* provide the essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war—the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit those units to accomplish their missions in combat. The branches and functions included are Adjutant General Corps, Acquisition Corps, Chaplain Corps, Finance Corps, Judge Advocate General Corps, Medical Corps, Ordnance Corps, Transportation Corps, and Quartermaster Corps.

There are approximately 2,000 Table of Organization and Equipment (TOE) units and Table of Distribution and Allowances (TDA) units in the ARNG. TOE units are the Army's "go to war" operational forces. TDA units are non-tactical units such as fixed facilities, command and control headquarters, and other organizations. Approximately 75 percent of ARNG units are TOE units. Under the no action alternative, there would be no changes in the nature of the ARNG organizations' contribution to the Army's total force structure or to TOE or TDA units.

ARNG maneuver brigades. ARNG combat brigades are identified as being divisional and separate, as follows:

- *Divisional Brigades*

  28th Infantry Division: 2nd Infantry Brigade, 55th Armored Brigade, 56th Armored Brigade
  29th Infantry Division (Light): 1st Infantry Brigade, 3rd Infantry Brigade, 26th Infantry Brigade
  34th Infantry Division: 1st Armored Brigade, 2d Infantry Brigade
  35th Infantry Division (Mech): 66th Infantry Brigade, 149th Armored Brigade
  36th Infantry Division[5]: 49th Infantry Brigade, 56th Cavalry Brigade, 72nd Armored Brigade
  38th Infantry Division (Mech): 37th Armored Brigade, 46th Infantry Brigade[6]
  40th Infantry Division: 2nd Armored Brigade, 3rd Infantry Brigade
  42nd Infantry Division: 3rd Armored Brigade, 50th Infantry Brigade, 86th Armored Brigade.

[5] In 2004 the 49th Armored Division in Texas was reflagged as the 36th Infantry Division.

[6] As the result of a separate, earlier NGB proposal, the 46th Infantry Brigade is slated for inactivation during Fiscal Year 2005. It is not considered subject to the proposed action.

- *Separate Brigades*

  29th Infantry Brigade
  30th Armored Brigade (Mech) (assigned to 24th Infantry Division (Mech))
  32nd Infantry Brigade
  39th Infantry Brigade (assigned to 7th Infantry Division (Light))
  41st Infantry Brigade (assigned to 7th Infantry Division (Light))
  45th Infantry Brigade (assigned to 7th Infantry Division (Light))
  48th Infantry Brigade (Mech) (assigned to 24th Infantry Division (Mech))
  53rd Infantry Brigade
  76th Infantry Brigade
  81st Armored Brigade
  92nd Infantry Brigade
  116th Armor Brigade
  155th Armor Brigade
  207th Scout Group
  218th Infantry Brigade (Mech) (assigned to 24th Infantry Division (Mech))
  256th Infantry Brigade (Mech)
  278th Armored Cavalry Regiment

ARNG Division Redesign Study (ADRS). In May 1995 the congressionally appointed Commission on Roles and Missions of the Armed Forces recommended that "Reserve component forces with lower priority tasks should be eliminated or reorganized to fill force shortfalls in higher priority areas." The ADRS program, which was approved by the Secretary of the Army on May 23, 1996, reduces the Army's Combat Support and Combat Service Support force shortfall by converting lower-priority ARNG combat brigades and "slice" elements from two divisions to the required Combat Support and Combat Service Support structure in Fiscal Years 1999 through 2009. The first two phases of conversion to Combat Service and Combat Service Support will be completed by Fiscal Year 2007.

Capabilities ratings. Under the Global Status of Resources and Training Systems,[7] each measured unit throughout the Department of Defense reports a "C" rating, which indicates its capability to perform its wartime missions. ARNG enhanced brigades and "Force Support Package" units (i.e., units with specific capabilities that are identified for early assignment in fighting wars) are provided sufficient personnel, training, and equipment resources to ensure their receiving a C-1 rating (fully capable). ARNG divisional brigades are resourced sufficiently to enable them to meet C-3 standards (capable of undertaking many, but not all, portions of the wartime mission). Under the no action alternative, allocation of resources and, hence, the capabilities rating attained by various organizations would not change. See Appendix A for further explanation of C ratings.

Geographic distribution of forces. The ARNG consists of approximately 350,000 soldiers in 1,800 organizations and units located at 3,300 sites in 2,700 communities

[7] See the glossary in Appendix A for a full description of the Global Status of Resources and Training System.

across the United States and in three territories and the District of Columbia. Under the no action alternative, personnel in ARNG units would remain as geographically distributed.

Training. The Army's standardized training doctrine, contained in Field Manual 25-100 (*Training the Force*), provides guidelines on how to plan, execute, and assess training at all levels. *Training the Force* provides an authoritative foundation for individual, leader, and unit training. Individual training develops soldiers who are proficient in battlefield skills, disciplined, physically tough, and highly motivated. Leader training, an imperative for every echelon, is an investment in the Army of today and tomorrow. Unit training, also known as "collective" training, prepares forces for the rigors of the battlefield. *Training the Force* applies to leaders at all levels and to every type of organization.

Unit commanders from corps to company publish a list, approved by the next higher wartime commander, of mission essential tasks that their units must perform in wartime. A mission essential task is a collective task in which an organization must be proficient to accomplish an appropriate portion of its wartime missions. An organization's mission essential task list (METL) is a compilation of collective tasks that must be successfully performed if an organization is to accomplish its wartime mission. For each mission essential task, conditions and standards are established or referred to in training publications. Leaders use the METL and associated conditions and standards to achieve battle focus in unit training. Leaders assess their unit's ability to perform mission essential tasks and then determine the best training strategy to build and sustain proficiency in each task. Each time training is planned, leaders adjust their assessment of unit proficiency in mission essential tasks and consider the best training strategy to build and sustain proficiency in each task.

The most common form of collective instruction is the training exercise. The ARNG uses several types of training exercises. Depending on the type used, only a few dozen personnel from one unit might be involved at a single location or many thousands of personnel from multiple units might be involved at multiple locations. The following describes the principal types of training exercises used by ARNG organizations.

- *Combined Arms Live-Fire Exercises (CALFEX).* Collective training that is jointly conducted by associated Combat, Combat Support, and Combat Service Support units.

- *Command Field Exercise (CFX).* A field training exercise with reduced troop and vehicle density, but with full command and control and Combat Service Support units.

- *Command Post Exercise (CPX).* A medium-cost, medium-overhead exercise in which the forces are simulated; may be conducted from garrison locations or in between participating headquarters.

- *Deployment Exercise (DEPLEX).* An exercise that provides training for individual soldiers, units, and support agencies in the tasks and procedures for deploying from home stations or installations to potential areas of hostilities.

- *Field Training Exercise (FTX).* A high-cost, high-overhead exercise conducted under simulated combat conditions in the field. It exercises command and control of all echelons in battle functions against actual or simulated opposing forces.

- *Fire Coordination Exercise (FCX).* A medium-cost, reduced-scale exercise that can be conducted at the platoon, company/team, or battalion/task force level. It exercises command and control skills through the integration of all organic weapon systems, as well as indirect and supporting fires. Weapon densities may be reduced for participating units and subcaliber devices substituted for service or training ammunition.

- *Map Exercise (MAPEX).* A low-cost, low-overhead training exercise that portrays military situations on maps and overlays that may be supplemented with terrain models and sand tables. It enables commanders to train their staffs in performing essential integrating and control functions under simulated wartime conditions.

- *Tactical Exercise Without Troops (TEWT).* A low-cost, low-overhead exercise conducted in the field on actual terrain suitable for training units for specific missions. It is used to train subordinate leaders and battle staffs on terrain analysis, unit and weapons emplacement, and planning of the execution of the mission.

Individual training occurs at ARNG organizational armories, readiness centers, maintenance shops, and training sites on a regular basis. Collective training of troops in the field occurs at numerous locations. The amount of land required to support collective training depends on the type of unit being trained and the mission essential tasks to be accomplished. Training Circular 25-1 (*Training Land*) identifies minimum land maneuver areas for various types of exercises and training events involving all major types of combat units. Table C-3 (referenced in the discussion of real property in Section 3) shows the amount of land required for collective training of selected units.

Weapons systems, vehicles, and other equipment. Under the no action alternative, ARNG organizations would continue to use their present types and quantities of weapons systems, vehicles, and other equipment. Heavy vehicles and equipment would continue to be stored, maintained, and repaired primarily at Mobilization and Training Equipment Sites (MATES) and Unit Training Equipment Sites (UTES) at numerous locations across the United States. ARNG organizations would continue to recapitalize (modernize) weapons systems and vehicles as dictated by mission requirements and within the constraints of budgetary resources. Additional and new weapons systems and vehicles could be periodically fielded to ARNG organizations based on acquisition procedures and military needs. Appendix B identifies major weapons systems, vehicles, and other equipment currently used by ARNG organizations.

Analysis of the no action alternative. Under the no action alternative, the NGB would not restructure its combat brigades and other forces into modular organizations. Inclusion of the no action alternative, prescribed in regulations issued by the Council on Environmental Quality, serves as a benchmark against which the potential effects of federal actions can be evaluated. The no action alternative is evaluated in detail in this PEA.

2.2 PROPOSED ACTION

The NGB proposes to transfer authorizations for two brigades to the Active Component and to convert all remaining maneuver brigades to a modular structure. At end state, there would be 10 Heavy BCT(UA)s, 23 Infantry BCT(UA)s, and 1 Stryker BCT. The eight ARNG division headquarters would be reorganized to create modular units of employment to provide command and control of organic, assigned, and attached combat forces. Combat Service and Combat Service Support personnel and equipment would be reorganized into various types of support units of action (SUAs). As a result, many of the capabilities previously found within divisions would be shifted to the BCT(UA)s and SUAs. These new organizations would be designed to deploy, and to be employed, as elements supporting joint force operations.

Under evolving Army doctrine, a maneuver unit of action (UA) possesses a wide range of combat capabilities extending to combined arms, signal, military police/security, chemical, logistics, fires, intelligence, engineer, and armed reconnaissance capabilities. UAs are more capable of independent action because of their improved organization and enhanced equipment. They are permanently task-organized to the way they will fight. UAs have greater capability for rapid packaging, responsive deployment, and sustained employment to support combatant commanders. One or more deployed brigade combat teams serving in the UA role would be augmented by a division-level unit of employment (UEx) or a corps-level unit of employment (UEy) and one or more standardized support UAs. Support UAs would be manned, equipped, and trained for specialized functions: Aviation, Fires, Sustainment, Maneuver Enhancement, or Battlefield Surveillance Brigades (BFSB) under the control of a UEy or UEx. Units of employment (UEs) focus on battles, major operations, and decisive land campaigns in support of joint operational and strategic objectives. UEs have the inherent capability to interact effectively with multinational forces, as well as with interagency, nongovernmental organizations and with private organizations.

Historically, divisions have been combined arms[8] organizations of 8 to 11 maneuver battalions, 3 to 4 field artillery battalions, and other combat, Combat Support, and Combat Service Support units. Divisions, designed to be largely self-sustaining, are capable of performing any tactical mission. Under Army doctrine, divisions are the basic units of maneuver at the tactical level and possess great flexibility through the tailoring of

[8] *Combined arms* refers to the coordinated efforts of several distinct types of soldiers and weapons systems in one organization, resulting in maximum flexibility and cooperation during operational and tactical military operations. An armored division epitomizes the doctrine of combined arms through its combination of infantry, tank, artillery, reconnaissance, and helicopter units, all of which are coordinated and directed by one command structure.

their brigades and attached forces for specific combat missions. Evolving doctrine emphasizes a more brigade-centric structuring of forces. Such smaller units, while very agile and lethal, represent an opportunity for rapidly reaching crisis areas through deployment of fewer forces that are already largely tailored to specific kinds of missions.

Mission. Under the proposed action, the federal and state missions assigned to ARNG forces would not change.

Brigades to be converted. Table 2-1 identifies each maneuver combat brigade subject to the proposed action, its headquarters location, and its proposed end state. The first six maneuver brigades to become modular BCT(UA)s, beginning to convert in Fiscal Year 2005, would be the 30th Infantry Brigade of the 24th Infantry Division (Mechanized), the 81st Armored Brigade (Separate), and the 39th Infantry Brigade of the 7th Infantry Division (Light), the 1st Infantry Brigade of the 29th Infantry Division, the 3rd Infantry Brigade of the 42nd Infantry Division, and the 1st Armored Brigade of the 34th Infantry Division. The sequence of brigade conversion after Fiscal Year 2005 might change as circumstances dictate and additional planning occurs. Eventually, all maneuver combat brigades will convert in place.

Table 2-1

Brigade Actions

Organization	Location	Current	Proposed Action (Fiscal Year)
Division brigades			
28th Infantry Division	Harrisburg, PA		UEx (2007)
2nd Brigade	Washington, PA	Heavy	Infantry BCT(UA) (2007)
55th Brigade	Scranton, PA	Heavy	Heavy BCT(UA) (2007)
56th Brigade	Philadelphia, PA	Heavy	Stryker BCT (2005) (IOC FY 2008)
29th Infantry Division	Fort Belvoir, VA		UEx (2008)
1st Brigade	Staunton, VA	Light	Infantry BCT(UA) (2005)
3rd Brigade	Pikesville, MD	Light	Infantry BCT(UA) (2006)
26th Brigade	Springfield, MA	Light	Infantry BCT(UA) (2006)
34th Infantry Division	Rosemont, MN		UEx (2005)
1st Brigade	Stillwater, OK	Heavy	Heavy BCT(UA) (2005)
2d Brigade	Boone, IA	Light	Infantry BCT(UA) (2006)
35th Infantry Division	Fort Leavenworth, KS		UEx (2005)
66th Brigade	Decatur, IL	Light	Infantry BCT(UA) (2006)
36th Infantry Division	Austin, TX		UEx (2008)
49th Brigade	Arlington, TX	Heavy	Infantry BCT(UA) (2008)
56th Brigade	Fort Worth, TX	Heavy	Infantry BCT(UA) (2007)
72nd Brigade	Marshall, TX	Heavy	Authorizations to Active Component
38th Infantry Division	Indianapolis, IN		UEx (2006)
37th Brigade	North Canton, OH	Heavy	Infantry BCT(UA) (2007)

Table 2-1
Brigade Actions (continued)

Organization	Location	Current	Proposed Action (Fiscal Year)
149th Brigade	Fort Know, KY	Heavy	Infantry BCT(UA) (2008)
40th Infantry Division	Los Alamitos, CA		UEx (2007)
2nd Brigade	San Diego, CA	Heavy	Infantry BCT(UA) (2007)
3rd Brigade	Long Beach, CA	Heavy	Authorizations to Active Component
42nd Infantry Division (Mech)	Troy, NY		UEx (2006)
3rd Brigade	Buffalo, NY	Heavy	Infantry BCT(UA) (2005)
50th Brigade	Fort Dix, NJ	Heavy	Infantry BCT(UA) (2008)
86th Brigade	Montpelier, VT	Heavy	Infantry BCT(UA) (2007)
Separate Brigades			
29th Infantry Brigade	Kalaeloa, HI	Light	Infantry BCT(UA) (2007)
30th Infantry Brigade	Clinton, NC	Heavy	Heavy BCT(UA) (2005)
32nd Infantry Brigade	Madison, WI	Light	Infantry BCT(UA) (2008)
39th Infantry Brigade	Little Rock, AR	Light	Infantry BCT(UA) (2005)
41st Infantry Brigade	Tigard, OR	Light	Infantry BCT(UA) (2006)
45th Infantry Brigade	Oklahoma City, OK	Light	Infantry BCT(UA) (2008)
48th Infantry Brigade	Macon, GA	Heavy	Infantry BCT(UA) (2007)
53rd Infantry Brigade	Tampa, FL	Light	Infantry BCT(UA) (2007)
76th Infantry Brigade	Indianapolis, IN	Light	Infantry BCT(UA) (2008)
81st Armored Brigade	Seattle, WA	Heavy	Heavy BCT(UA) (2005)
92nd Infantry Brigade	Juana Dias, PR	Light	Infantry BCT(UA) (2008)
116th Armor Brigade	Boise, ID	Heavy	Heavy BCT(UA) (2006)
155th Armor Brigade	Tupelo, MS	Heavy	Heavy BCT(UA) (2006)
207th Scout Group	Fort Richardson, AK	Light	Infantry BCT(UA) (2008)
218th Infantry Brigade	Newberry, SC	Heavy	Heavy BCT(UA) (2008)
256th Infantry Brigade	Lafayette, LA	Heavy	Heavy BCT(UA) (2006)
278th Armored Cavalry Regiment	Knoxville, TN	Heavy	Heavy BCT(UA) (2006)

Organization of modular forces. The Army publishes a Table of Organization and Equipment (TOE) to identify precisely all personnel and equipment of every unit and organization. Conversion of ARNG combat brigades to a modular design would alter each brigade's TOE. Creation of division-level units of employment and support units of action would result in new TOEs. Final TOEs are not yet available to specify exactly how many soldiers (by grade and skills), weapons systems, vehicles, and other types of equipment would be in each type of organization. The following factors, applicable to the restructuring process, provide useful insight for planning and assessment:

- *Heavy BCT(UA).* A modular Heavy BCT(UA) would consist of six battalions. It would reduce the number of maneuver battalions from three to two; each new battalion would increase its number of companies from three to four. The modular BCT(UA) would have 58 M1 Abrams Main Battle Tanks and 66 M2 Bradley Infantry Fighting Vehicles. An armed reconnaissance battalion would be equipped with 23 M3 Bradley Cavalry Fighting Vehicles. A brigade troops battalion would provide the headquarters element, as well as signal, military intelligence, engineer assets, and unmanned aerial vehicles (UAVs) for battlefield intelligence and surveillance. A fires battalion would be equipped with 16 M109A6 Paladin systems (155 self-propelled howitzer cannons). A support battalion would provide transportation, maintenance, and medical assets. Current division heavy brigades have 3,338 soldiers, and separate heavy brigades are designed to have 3,934 soldiers. Each proposed Heavy BCT(UA) would have 3,670 soldiers. Table 2-2 shows the units, major weapons systems, and personnel assets of the Heavy BCT(UA).

Table 2-2

Major Elements, Modular Heavy BCT(UA)

Brigade Organization	Companies/Platoons	Soldiers
Brigade Troops Battalion	Headquarters and Headquarters Company	
	BTB Headquarters and Headquarters Company	
	Signal Company	
	Military Intelligence Company	
Armored Battalion	Headquarters and Headquarters Company	
	Mechanized Infantry Company (M2)	
	Mechanized Infantry Company (M2)	
	Tank Company (M1A1)	
	Tank Company (M1A1)	
	Engineer Company	
	Forward Support Company	
Armored Battalion	Headquarters and Headquarters Company	
	Mechanized Infantry Company (M2)	
	Mechanized Infantry Company (M2)	
	Tank Company (M1A1)	
	Tank Company (M1A1)	
	Engineer Company	
	Forward Support Company	
Armed Reconnaissance Battalion	Headquarters and Headquarters Troop	
	Reconnaissance Troop (M3/LRAS3[1])	
	Reconnaissance Troop (M3/LRAS3)	
	Reconnaissance Troop (M3/LRAS3)	

Table 2-2

Major Elements, Modular Heavy BCT(UA) (continued)

Brigade Organization	Companies/Platoons	Soldiers
	Forward Support Company	
Fires Battalion	Headquarters and Headquarters Battery	
	Firing Battery (M109A6)	
	Firing Battery (M109A6)	
	Target Acquisition Platoon	
	Unmanned Aerial Vehicle Platoon	
	Forward Support Company	
Support Battalion	Headquarters and Headquarters Company	
	Maintenance Company	
	Distribution Company	
	Medical Company	
	Total	**3,500+**

[1] Long-Range Advanced Scout Reconnaissance System (a Humvee-mounted asset).

- *Infantry BCT(UA).* A modular Infantry BCT(UA) would consist of six battalions. There would be two battalions of dismounted infantry, each having three rifle companies and one weapons company. The brigade would also have a reconnaissance, surveillance, and target acquisition squadron with two motorized reconnaissance troops and one dismounted reconnaissance troop. The fires battalion would be equipped with 16 105-mm towed artillery cannons and tactical UAVs. A brigade troops battalion would include the command element, as well as companies of signal, military intelligence, and engineering assets. A brigade support battalion could consist of a headquarters and headquarters company and companies or platoons for distribution (transportation assets), maintenance, and medical resources. Current division infantry brigades have from 2,469 to 2,944 soldiers, and separate infantry brigades are designed to have 3,640 soldiers. Each proposed Infantry BCT(UA) would have 3,286 soldiers. Table 2-3 shows the units, major weapons systems, and personnel assets of the Infantry BCT(UA).

Table 2-3

Major Elements, Modular Infantry BCT(UA)

Brigade Organization	Company/Platoon	Soldiers
Brigade Troops Battalion	Headquarters and Headquarters Company	
	BTB Headquarters and Headquarters Company	
	Signal Company	
	Engineer Company	
	Military Intelligence Company	

Table 2-3
Major Elements, Modular Infantry BCT(UA) (continued)

Brigade Organization	Company/Platoon	Soldiers
Infantry Battalion	Headquarters Company	
	Rifle Company	
	Rifle Company	
	Rifle Company	
	Weapons Company	
	Forward Support Company	
Infantry Battalion	Headquarters Company	
	Rifle Company	
	Rifle Company	
	Rifle Company	
	Weapons Company	
	Forward Support Company	
RSTA Squadron[1]	Headquarters and Headquarters Troop	
	Motorized Reconnaissance Troop	
	Motorized Reconnaissance Troop	
	Dismounted Reconnaissance Troop	
	Forward Support Company	
Fires Battalion	Headquarters and Headquarters Battery	
	Firing Battery (105-mm)	
	Firing Battery (105-mm)	
	Forward Support Company	
Support Battalion	Headquarters and Headquarters Company	
	Distribution Company	
	Maintenance Company	
	Medical Company	
	Total	**3,300+**

[1] Reconnaissance, Surveillance, and Target Acquisition Squadron.

- *Division-level unit of employment (UEx).* Creation of UExs would standardize the headquarters of the six types of divisions that now exist throughout the Army.[9] Several of the Combat Support and Combat Service Support resources that today are organized as separate brigades, battalion, and companies at the division level would be reorganized and assigned to maneuver combat brigades and support

[9] The six types of Army divisions are airborne, air assault, infantry (mechanized), armored, light infantry, and cavalry. Reflagging of the 49th Armored Division as the 36th Infantry Division in 2004 eliminated the last armored division in the ARNG. The eight ARNG divisions are now all infantry (mechanized), light infantry, and airborne forces.

units of action. As a result, there would be fewer forces at the division level. Division staffs would continue to include robust assets to ensure continuous oversight of BCT(UA)s and SUAs under their purview, as well as several representatives of various branches (e.g., Aviation, Field Artillery, Adjutant General, Ordnance Corps) to provide appropriate liaison and oversight functions. The UEx would not have organic forces beyond those comprising the headquarters; that is, there would be no SUA organic to the UEx. Table 2-4 identifies the principal elements of the UEx.

Table 2-4
Major Elements, Modular Unit of Employment

Major Element	Component Elements	Soldiers
Headquarters, Unit of Employment	Command Group	13
	Mobile Command Group	4
	Main Command Post	268
	Liaison Teams	8
Special Troops Battalion	Headquarters and Headquarters Company	183
	Signal Network Support Company	186
	Security Company	108
Tactical Command Post 1		96
Tactical Command Post 2		87
	Total	**953**

- *Support units of action (SUAs).* Consistent with the development of UAs and UExs, ARNG forces would be reorganized into SUAs for Aviation, Fires, Sustainment, Maneuver Enhancement, and Battlefield Surveillance Brigades (BFSB). SUAs would vary as to their manpower strength and equipment. Combat Service and Combat Service Support personnel to fill the ranks of the SUAs would be drawn primarily from existing independent groups and battalions. In addition, the ARNG would "re-balance" many of its forces through reassignment of soldiers' military occupational specialties (MOSs) and retraining. Subject to further analysis in the planning process and refinement of needs, it is generally believed that there are excess field artillery, air defense, engineer, armor, and certain logistics units. At the same time, there are insufficient numbers of military police, transportation, civil affairs, special operations, biological detection, and military intelligence units. Accordingly, personnel now performing the former functions would be reassigned to, and retrained for duties in, these latter types of units that would be distributed across the various SUAs.[10]

[10] There are numerous ARNG non-maneuver brigades from which personnel could be locally reassigned to reorganized modular elements or new modular organizations. These include, but are not limited to, the following: *Field Artillery Brigades:* 45th, 54th, 57th, 103rd, 113th, 115th, 130th, 135th, 138th,

Within the ARNG, manning of reorganized division-level command and control elements and creation of various types of support UAs would be drawn from several sources. In the Active Component, initiatives are now under way to increase the number of combat brigades from 33 to 43 by 2007, with a possibility for an additional 5 brigades shortly thereafter. Active Component plans call for conversion of some 39 field artillery battalions into military police units and the disbanding of 10 air defense artillery battalions. Many of these latter positions would migrate to RSTA units in the Active Component's new BCT(UA)s. The geographic in-place restructuring of ARNG forces would involve a similar magnitude of changes in individuals' skills training and classification and assignments of primary duties.

Table 2-5 shows the manpower strengths of various heavy and light brigades of both the Active Component and Reserve Component. Implementation of the proposed action would result in an overall reduction in the number of personnel in ARNG heavy and infantry maneuver brigades. Under the proposed action, nine ARNG brigades now classified as heavy would be converted to light brigades having fewer personnel. Two heavy brigades would be eliminated; the personnel authorizations would be transferred to the Active Component. The conversion of the nine heavy brigades to infantry brigades would result in elimination of nearly 1,800 tracked vehicles[11] from current ARNG brigade inventories.

Table 2-5
Representative Brigade Manpower Strengths

Unit	Location	Strength
Armored Brigade (Army XXI)	Fort Hood	3,458
Armored Brigade (Army of Excellence)	Fort Riley, Fort Stewart	3,913
Mechanized Brigade (Army XXI)	Fort Carson, Fort Hood	3,678
Mechanized Brigade (Army of Excellence)	Fort Stewart	4,060
Airborne Brigade	Fort Bragg, Fort Campbell	3,079
Light Infantry Brigade	Fort Drum, Schofield Barracks	2,702
2nd Armored Cavalry Regiment	Fort Polk	3,800
3rd Armored Cavalry Regiment	Fort Carson	4,656
Separate Armored Brigade	Fort Riley	4,350
Separate Mechanized Brigade	Fort Benning	4,548

Source: Army Transformation PEIS, 2002

142nd, 147th, 151st, 153rd, 169th, 196th, 197th, and 631st Field Artillery Brigades; *Air Defense Artillery:* 32nd, 111th, and 263rd Air Defense Artillery Brigades; *Engineer Organizations:* 16th, 30th, 35th, 109th, 135th, and 194th Engineer Brigades; *Other Brigades:* 300th Military Intelligence Brigade, 43rd, 177th, and 260th Military Police Brigades, and 142nd, 228th, and 261st Signal Brigades; *Special Forces:* 19th and 20th Special Forces Groups (Airborne); and *Other Organizations:* 33rd Area Support Group, 167th Corps Support Group, 184th Transportation Brigade, 404th Rear Operations Center, and 852nd Rear Area Operations Center.

[11] Eliminated tracked vehicles would principally include M1A1 Main Battle Tanks, M2/M3 Bradley Infantry/Cavalry Fighting Vehicles, M113 armored personnel carriers, and M577 command post carriers.

Geographic distribution of forces. The brigades to be converted or formed to modular design have their headquarters in virtually every state, the District of Columbia, and three territories. Upon conversion, BCT(UA)s would remain at their present locations. Each brigade's subordinate units would similarly remain assigned to their present armories or readiness centers. Creation of UExs and SUAs would occur generally where those personnel and equipment assets are now located.

Capabilities ratings. The ARNG Campaign Plan would fundamentally change the approach taken to the way ARNG organizations are resourced and their capabilities ratings.

Heretofore, ARNG divisions have been resourced to achieve C-3 status, and enhanced separate brigades and Force Support Package units have been resourced to achieve C-1 status. Under the proposed action, modularized organizations would be resourced to meet C-1 status on a cyclical basis. Each modularized brigade and division-level organization would be placed on a 6-year cycle, the last year of which would find each organization eligible for deployment on a rotational basis. The following identifies the way ARNG organizations would be "ramped up" to meet deployment eligibility requirements on a 6-year cyclical basis.

- *ARNG Force Generation Year 1.* Year 1 is the first year following eligibility for deployment (which might or might not have occurred). ARNG organizations would attain the P-3 level of readiness (greater than 70 percent of personnel available), attain and sustain individual proficiency, and attain the S-3 level of equipment on hand.

- *ARNG Force Generation Year 2.* Attain the P-2 level of readiness (greater than 80 percent of personnel available); attain individual, crew, and squad proficiency through platoon maneuver training and conduct Table VIII gunnery[12]; and attain a minimum of S-3 for equipment on hand.

- *ARNG Force Generation Year 3.* Sustain the P-2 level of readiness (greater than 85 percent of personnel available); validate individual, crew, and squad proficiencies through platoon maneuver training and conduct Table VIII gunnery; and sustain a minimum of S-3 level (greater than 80 percent) for equipment on hand.

- *ARNG Force Generation Year 4.* Attain the P-1 level of readiness (greater than 90 percent of personnel available); attain platoon proficiency through company maneuver at 84 percent of mission essential task list (METL) tasks and conduct Table VIII gunnery; and attain the S-1 level (greater than 90 percent) for equipment on hand.

[12] Gunnery tables are designed to develop and test the proficiency level of individuals, crews, and platoons. Gunnery tables are designated I through XII. Table VIII is a crew qualification table and is a gate to the advanced tables. Tables IX through XII are the advanced tables, which allow the commander to focus the unit on collective live-fire training.

- *ARNG Force Generation Year 5.* Sustain the P-1 level of readiness at 100 percent of personnel, attain platoon validation and company proficiency through battalion maneuver, and attain the S-1 level of equipment on hand (100 percent).

- *ARNG Force Generation Year 6.* During the deployment eligibility year, sustain the P-1 level to enable mobilization and sustain the S-1 level of equipment on hand (100 percent); deployed force sustains proficiency at level deployed.

Schedule. The first six maneuver combat brigades to convert to modular design would begin their conversion in Fiscal Year 2005. Conversions would continue through Fiscal Year 2008. Conversion of division-level forces to units of employment would begin with the conversion of the 34th Infantry Division and 35th Infantry Division in Fiscal Year 2005, with all remaining divisions beginning conversion between Fiscal Year 2006 and 2008. TOEs and MTOEs for SUAs continue to be developed; a schedule for SUA conversions has not yet been determined. Creation of SUAs would occur on a schedule similar to the one planned for maneuver UAs.

Training. The training of modular units would be highly similar to that of existing units. Most training time and effort would continue to be expended to develop and reinforce the skills of individuals in their military occupational specialties and to provide crew and squad training. Collective training of platoons, companies, and larger units would also occur in accordance with Army Readiness and Training Evaluation Program (ARTEP) directives.

Placing ARNG organizations on a 6-year capabilities ratings cycle would marginally affect the types and intensities of training activities. Training would be characterized as progressing from the individual, crew, and squad levels to the brigade level over a 6-year cycle. Implementation of guidance on ARNG force generation would result in the following stepwise progression for training activities.

- *ARNG Force Generation Year 1.* Train at individual level.

- *ARNG Force Generation Year 2.* Achieve individual, crew, and squad proficiencies through platoon maneuver training for more than 64 percent of all crew and squad tasks that support METLs and conduct Table VIII gunnery.

- *ARNG Force Generation Year 3.* Achieve individual, crew, and squad proficiencies through platoon maneuver training for more than 70 percent of all crew and squad tasks that support METLs and conduct Table VIII gunnery.

- *ARNG Force Generation Year 4.* Achieve platoon proficiencies, conduct company and battery maneuver, and conduct Table VIII gunnery.

- *ARNG Force Generation Year 5.* Attain platoon validation and company proficiency through battalion maneuver and Table VIII gunnery.

- *ARNG Force Generation Year 6.* Deploy force and sustain proficiency at level deployed; for non-deployed force, sustain proficiency through company maneuver (due to limitations concerning sufficient combat training center resources).

Training would occur at locations currently used for training of operational forces. The majority of all training, which is focused on individual, crew, and squad skills, would continue to occur at local armories, readiness centers, organizational maintenance shops, and consolidated maintenance shops. Weapons training would occur at Local Training Areas, Major Training Areas, and Active Component maneuver and firing ranges. Most major weapons systems (e.g., tanks, Bradley Fighting Vehicles, Paladin artillery, and Multiple Launch Rocket Systems) would continue to be stored and maintained at MATES and UTES.

Weapons systems, vehicles, and other equipment. Across the entire ARNG, implementation of the proposed action would result in few changes to the types and quantities of equipment now employed by ARNG forces. There would be no change in the manner of use of currently fielded weapons systems, vehicles, and equipment. The following changes in quantities of systems could occur:

- *Fewer heavy weapon systems.* There would be reduction of slightly more than 50 percent in the gross numbers of M1A1 tanks, M2 Bradley Infantry Fighting Vehicles, and M3 Bradley Cavalry Fighting Vehicles assigned to ARNG organizations. These reductions would be due to there being fewer heavy brigades and more infantry brigades. The number of M106A9 Paladin systems and Multiple Launch Rocket Systems would remain essentially unchanged; these systems would be reorganized into fires SUAs.

- *More light vehicles.* The M998 family of vehicles (high-mobility multipurpose wheeled vehicles, or "Humvees") represents the most numerous light vehicle currently used by the ARNG. The ARNG expects to field and operate a larger number of wheeled vehicles once modularization of forces is fully implemented. Virtually all organizations rely on the Humvee, the Army's primary cargo and troop carrier. Humvee variants serve as shelter carriers, armament carriers, ambulances, TOW missile carriers, and scout-reconnaissance vehicles. Conversion of heavy brigades to infantry brigades would increase overall requirements for Humvees. Requirements for other types of vehicles could increase as well. These would extend to the family of medium tactical vehicles, which is based on the M1078 standard cargo truck (2.5-ton), and the heavy expanded mobility tactical truck (HEMTT), which is based on the M977 truck series (10-ton). The extent of any increase in the numbers of these vehicles cannot be confirmed until TOEs have been completed.

The Army is developing its future combat system (FCS). This system is envisioned to be a network-centric "system of systems" to provide land combat capability with multi-mission functionality, including beyond-line-of-sight direct fires, precise long-range indirect fires, standoff sensors, and robotics. FCS technology will be inserted into the brigade-sized units of action the Army is establishing, with one Active Component UA

being selected in 2008 as an "experimental unit" to test all the new FCS technology. The Army projects that 32 UAs will be fielded with some FCS capabilities by 2014. No date has yet been set for fielding of the FCS to ARNG organizations; it is not expected that components of the FCS would be available for use during the period evaluated in this PEA.

Brigade authorization transfers to the Active Component. Under the proposed action, the NGB would assign its authorization for two brigades to the Active Component. This action would affect authorizations for approximately 7,000 soldiers. The two units identified for inactivation are the 72nd Brigade of the 36th Infantry Division and the 3rd Infantry Brigade of the 40th Infantry Division. Portions of the missions of those units might be reassigned to, or absorbed by, other ARNG organizations. Subject to the needs of the Army and the desires of state officials, ARNG armories and readiness centers currently supporting the two affected brigades could be assigned new missions. Personnel of the affected brigades would be encouraged to join other ARNG organizations within their geographic area or to continue their military service in the Active Component.

2.3 ALTERNATIVES

2.3.1 Reorganize to Non-modular Structure

The Army's *Transformation Campaign Plan*, issued by Headquarters, Department of the Army and evaluated in the Army Transformation PEIS, guides all efforts to transform and posture the Army for the 21st century. The ARNG Campaign Plan carries out actions set in motion in the Army's Campaign Plan. Although the planning process is centrally controlled, numerous organizations and entities throughout the Army iteratively contribute to the overall effort. This ensures that planning is thorough and takes into account all relevant considerations related to doctrine, training, leader development, organizations, installations, materiel, and soldiers.

The change in doctrine resulting in proposals for creating and relying on modular brigades is a product of the planning process. Directives issued by Headquarters, Department of the Army to the NGB have outlined objectives, provided overarching guidance, and imposed certain requirements to ensure consistency across the Army. The NGB is tasked to restructure certain forces into modular units of specified sizes having specified capabilities and weapons systems and other equipment. Deviation from the general precepts and specific requirements of Headquarters, Department of the Army directives would jeopardize the Army's implementation of its transformation program. In this light, alternatives to modular brigades are not available, and therefore none are evaluated in this PEA.

2.3.2 Partial Reorganization of ARNG Forces

Under this alternative, the NGB would direct modularization of only portions of ARNG forces; the remaining portions of ARNG forces would retain their historical division-centric structural design. Implementation of such an alternative would present three

serious drawbacks. First, it would not meet the need to increase the pool of brigades and other forces upon which the Army can draw in responding to national defense requirements. Second, division-centric forces would be less likely to be deployed, resulting in an inequitable share of the burden being borne by those elements of the ARNG that, from a force structure perspective, comport with current doctrine. Finally, failure to modularize all ARNG forces would fail to leave some forces amenable to easy tailoring of their units and integration with Active Component forces. Because these shortcomings could jeopardize national security interests, this alternative is deemed not reasonable, and therefore it is not evaluated in detail in this PEA.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 INTRODUCTION

This section describes relevant environmental and socioeconomic resources in 2004 and expected consequences of implementing the proposed action. Nine resource areas are included for evaluation: real property, air quality, noise, water resources, geology and soil resources, biological resources, cultural resources, hazardous materials and wastes, and the sociological environment. Data tables for the resources evaluated in this PEA are contained in Appendix C. This section also identifies potential cumulative effects and discusses potential mitigation actions.

Implementation of the proposed action would occur on a very broad geographic scale. This PEA specifically incorporates the wide perspective of U.S. and Army resources discussed in Section 3.0 and Appendix C of the Army Transformation PEIS.[13]

The proposed action is, first and foremost, a restructuring of ARNG organizations. Most visibly, a substantial portion of the ARNG will convert from heavy units to infantry, resulting in changes to the types of training that the units would conduct and use of fewer heavy weapons systems. The proposed action would not, for the most part, alter how the ARNG looks or how it operates at its many facilities nationwide.

3.2 REAL PROPERTY

3.2.1 Existing Conditions

Definition of resource. *Real property* consists of land and interests in land, leaseholds, standing timber, buildings, improvements, and appurtenances thereto.[14] *Facilities* are the

[13] The PEIS is available at http://notes.tetratech-ffx.com/army_transformation_PEIS/tcppeis.htm.

[14] Real estate includes land, right, title, and interest therein and improvements thereon. Land includes minerals in their natural state and standing timber; when severed from the land, these become personal property. The General Services Administration (GSA) has excepted growing crops from the definition of real estate when the disposal agency designates such crops for disposal by severance and removal from the land. Rights and interest include leaseholds, easements, rights-of-way, water rights, air rights, and rights to lateral and subjacent support. Installed building equipment is considered real estate until severed. Equipment in place is considered personal property.

buildings, structures, and other improvements placed on the land to support the Army's mission. *Land use* refers to the planned development of property to achieve its highest and best use and to ensure compatibility among adjacent uses. *Infrastructure* is the combination of supporting systems that enable use of land and facilities.

Incorporation. This PEA incorporates by reference the discussion of real property contained in the Army Transformation PEIS. Specific information is provided below.

Real property. The ARNG holds real estate in every state and territory. The variety of locations provides ARNG forces a wide variety of terrain, ranging from deserts and arctic to jungles and mountains. ARNG real property also extends to lands classifiable as swamp/wetlands, forest, open woodland/savanna, grassland prairie, and semiarid shrub/steppe. In addition, ARNG forces train at Active Component installations; these, too, are immensely varied in their terrain settings. The wide array of terrain enables units to train in a variety of environments. Table C-1, "Terrain Settings at Select Army Installations," lists the terrain settings at a representative selection of ARNG and Army installations. Many Army and ARNG installations comprise multiple terrain settings.

The ARNG acquires land through a variety of methods that rely on either state or federal authorities. In the federal arena, the most common means for acquiring interests in real property are purchase, condemnation, donation, and exchange when specified by an authorization act. Easements are also obtained using these four methods. Leaseholds in real property, giving the government exclusive use or co-use with the owners for specific purposes, are acquired by negotiation or condemnation. The Army may obtain the following types of interests in real property.

- *Fee.* Real estate for which an owner has all right, title, and interest. A fee estate is without condition, limitation, or restriction. Title to most U.S. real property is held in fee. This type of interest is also sometime known as "fee simple" or "fee simple absolute."

- *Leasehold.* An estate in realty held under a lease for a fixed period of time. A lease is a contract for exclusive possession of property for a determinate period. The lessor grants a leasehold in consideration of a return of rent.

- *License.* An authority to do a specified act on the property of another without acquiring any estate or interest in that land.

- *Permit.* A temporary authority given to a government agency to use real property under the jurisdiction of another government agency.

- *Easement.* A right to use the land of another for a special purpose.

- *Option.* A right to purchase real estate at a specified price during a stipulated period of time.

The ARNG's use of federal property is typically based on a permit or license issued by the Army. Permits to use government-owned real property are instruments issued by another government department or agency.

When acquiring property for use by ARNG organizations, the Army adheres to several principal policies. Foremost, no request to acquire real estate is considered or approved unless it is established that the activity to be accommodated is essential to an assigned mission, that real property under the control of the Army is inadequate to satisfy the requirement, and that no real property under the control of any other federal agency is suitable and available for use by the Army on a permit or joint use basis.

If an activity is essential to an assigned mission and the real property need cannot be filled by the use of Army or other federal property on a permit or joint use basis, the following alternatives are considered in the order listed: donation or long-term nominal rental lease, acquisition of excess lands from the other military departments by transfer, recapture of use, withdrawal from the public domain, exercise of existing authorities for the exchange of government-owned real property for non-government-owned real property that is adaptable to the military need, acquisition of excess lands from federal agencies by transfer, and acquisition by purchase, lease, or condemnation. Specific requirements are determined in each case, and only the minimum amount of real property necessary to support the mission is to be acquired. Except in very narrowly defined circumstances, if permanent construction is to be placed on land, the government must have fee title or acquire title to the land (including all mineral rights and improvements) or have a long-term (50 year) leasehold interest. Land for use as a training site by the Reserve Component normally is not acquired when the value of the land exceeds that of rural farmland in the area.

Land use planning. Land use planning at ARNG and Army installations uses 12 general land use classifications. These classifications roughly parallel the types of designations employed by counties and municipalities in the civilian sector. The Army's 12 classifications for land use are airfields, maintenance, industrial, supply/storage, administration, training/ranges, unaccompanied personnel housing, family housing, community facilities, medical, outdoor recreation, and open space. Like designations used in the civilian sector, the Army's land use classifications identify the principal kinds of facilities and activities to be found in particular areas of an installation.

The pattern of land uses at each installation is unique. Because of the wide array of installation missions and existing assets, there is no single, ideal land use plan. Land use planning integrates the physical elements of an installation and the human (sociocultural) activities that take place within and around the installation. Sociocultural influences shape the land use plan as much as does the physical environment. The process of implementing land use plans includes efforts to keep them relevant through annual review and periodic updates. Proactive planning with adjacent communities fosters successful project development and facilities management. Coordination with city and county planning agencies aids in achieving compatibility with nearby off-post land uses.

Integrated Training Area Management (ITAM) Program. The ITAM Program is the Army's premier program for managing its training land assets. The program establishes procedures to achieve optimum, sustainable use of training lands by implementing a uniform land management program that includes inventorying and monitoring land conditions, integrating training requirements with land carrying capacity, educating land users to minimize adverse impacts, and providing for training land rehabilitation and maintenance.

ITAM installations are generally characterized as active Army, Army Reserve, and National Guard installations that have a major training or testing mission. Five tiers embedded within two major categories reflect the relative importance of locations used for training. Category 1 installations are those that have an Army-wide strategic and enduring training mission capability. Within this category, Tier 1 reflects those major training installations with strategic training value to the Army, Tier 2 reflects those installations with significant training value to MACOMs and having high range and land capability, and Tier 3 reflects those installations with range and land capability, and training value to MACOMs. Category 2 installations are those with limited mission capabilities that provide training opportunities to local commanders. Within this category, Tier 4 reflects training areas with value to local commanders and have a limited collective range and training land capability, and Tier 5 reflects local training areas, with time-distance value, that support small unit training of RC units. Table C-2, "Installations' Priority for ITAM Resources," identifies the Category 1 installations which receive priority with respect to resource allocations under the foregoing categorization scheme.

Distinct programs and supporting technologies under ITAM enable management activities. Installations under ARNG control participate in the ITAM Program through the following.

- *Range and Training Land Assessment (RTLA).* RTLA is the component of the ITAM Program that provides for the collecting, inventorying, monitoring, managing, and analyzing of tabular and spatial data concerning land conditions on an installation. RTLA provides data needed to evaluate the capability of training lands to meet multiple use demands on a sustainable basis. It incorporates a relational database and GIS to support land use planning decision processes. RTLA collects physical and biological resources data to relate land conditions to training and testing activities. These data are intended to provide information to effectively manage land use and natural resources and supply information for a variety of decision support and information management systems such as the Army Training and Testing Area Carrying Capacity (ATTACC) model and geographic information system (GIS). Formerly known as the Land Condition-Trend Analysis (LCTA) program, RTLA reflects a renewed focus on the sustained use of training and testing lands.
- *Land Rehabilitation and Maintenance (LRAM).* The LRAM program mitigates the environmental effects of training and testing through land maintenance and repair activities. LRAM repairs landscapes that no longer provide realistic or safe conditions in which to train. Land rehabilitation work can also play a role in

compliance with installation environmental regulations and best management practices (BMPs). Proactive and reactive techniques are used to solve specific problems related to loss of vegetation, soil erosion, catastrophic events, and nonmilitary impacts such as grazing. Restoration efforts depend on funding and the relative importance to training of a specific area.

- *Training Requirements Integration (TRI).* The objective of TRI is to guarantee adequate accessibility to training lands by integrating military training activities with ecological land constraints. TRI balances decisions regarding training events with environmental considerations. It accomplishes its mission by using Army Training and Testing Area Carrying Capacity (ATTACC) methodology to quantify the carrying capacity of training lands. Environmental and training factors considered include land condition, land rehabilitation costs, and training load (often expressed as maneuver impact miles, or MIMs). A successful TRI program accurately predicts the impacts and risks of land use and allows land managers to make informed decisions that minimize environmental damage from training.

- *Sustainable Range Awareness.* The Environmental Awareness program develops and distributes informational materials related to the sound environmental stewardship of natural and cultural resources on training lands. The Environmental Awareness program helps land users understand the impacts of their activities on the environment. This program also helps to convey Command emphasis on environmental stewardship and facilitates compliance with environmental regulations on training lands. Environmental Awareness receives technical assistance from installation natural resource staff to develop site-specific informational materials. Such materials include soldiers' field cards, posters, radio/television announcements, and articles in military periodicals. These educational materials are used to orient training land users on relevant environmental restrictions, rules, and procedures.

- *Geographic Information System*. A GIS is a mission enabling technology that provides standard mapping and spatial analysis capabilities. The capabilities depend on RTLA data and support LRAM project planning, TRI, range modernization project planning, and range use planning and scheduling. The GIS capabilities enable what-if analysis at the installation, major command, and HQDA levels.

Training lands. ARNG organizations require substantial real property resources to conduct training. Table C-3, "Maneuver Land Requirements," identifies the amount of land needed by units of various sizes to conduct specific types of training events.

ARNG organizations satisfy their requirements for training lands through use of Active Component installation lands, ARNG-controlled lands, and state-controlled lands. Table C-4, "Largest Army and ARNG Installations," identifies the largest installations of both the Active Component and the Reserve Component. Table C-5, "Army Principal Installations and Other Sites, by State," provides a list of facilities resources and lands

available to the ARNG organizations on a state-by-state basis. In training for their federal missions, ARNG organizations are not confined to use of resources in their respective states. Subject to budgetary constraints, distance, and availability, ARNG organizations may conduct training on the more than 15 million acres of land at the Army or ARNG installations or sites shown in Table C-5. Table C-6, "Selected Principal ARNG Training Areas," shows selected principal training lands controlled by ARNG organizations within the states. The training resources shown in Table C-6, comprising more than 2 million acres, support a considerable majority of the field training performed by ARNG organizations.

Infrastructure. Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly synthetic, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as urban or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. Although there is no national consensus as to what constitutes infrastructure, principal elements most often associated with the term include water systems, wastewater systems, storm water systems, solid waste management, energy, traffic and circulation, transportation systems, and communications systems.

Framework for protection of real property and its inherent resources. The Army has long recognized that its mission is only accomplished because America entrusts it with its most precious resources – its sons and daughters. It is the Army's obligation to ensure that our Soldiers today – and the Soldiers of the future – have the land, water, and air resources they need to train; a healthy environment in which to live; and the support of local communities and the American people. The *Army Strategy for the Environment: Sustain the Mission – Secure the Future,* announced on October 19, 2004, establishes a long-range vision that enables the Army to meet its mission today and into the future. Sustainability is the foundation for this Strategy and a paradigm that focuses thinking to address both present and future needs while strengthening community partnerships that improve the Army's ability to organize, equip, train, and deploy Soldiers as part of the joint force. Sustainability connects the Army's activities today to those of tomorrow with sound business and environmental practices. Simply complying with environmental regulations will not ensure the ability to sustain the mission. We must strive to become systems thinkers if we are to benefit from the interrelationships of the triple bottom line of sustainability: mission, environment, and community. To sustain the future the Army must implement effective policies and practices that safeguard the environment and quality of life in a manner that the nation expects.

The Army Strategy for the Environment is the starting point that commits Army leaders at all levels to certain goals and challenges them to develop innovative methods to achieve these goals. The Army has adopted the following long-term goals to achieve an enduring Army enabled by sustainable operations, installations, systems, and communities.

- *Goal: Foster a sustainability ethic.* Foster an ethic within the Army that takes the Army beyond environmental compliance to sustainability.

- *Goal: Strengthen Army operations.* Strengthen Army operational capability by reducing the Army's environmental footprint through more sustainable practices.

- *Goal: Meet test, training and mission requirements.* Meet current and future training, testing, and other mission requirements by sustaining land, air, and water resources.

- *Goal: Minimize impacts and total ownership costs.* Minimize impacts and total ownership costs of Army systems, materiel, facilities, and operations by integrating the principles and practices of sustainability.

- *Goal: Enhance well-being.* Enhance the well-being of Soldiers, civilians, families, neighbors, and communities through leadership in sustainability.

- *Goal: Drive innovation.* Use innovative technology and the principles of sustainability to meet user needs and anticipate future Army challenges.

Use of the National Environmental Policy Act in managing real property. NEPA requires the analysis and documentation of potential environmental effects associated with all major federal decisions. NEPA ensures that environmental factors are considered equally with the technological and economic components of a decision and that the public is fully informed and appropriately involved in the environmental analysis process. The NGB and ARNG organizations routinely employ the NEPA process to ensure sound stewardship of real property resources.

For ARNG actions, the NEPA process consists of integrating other environmental requirements, involving the public, identifying associated effects, operating on the principle of "full disclosure," analyzing relevant technical information, documenting analyses, summarizing technical information for the public and the decisionmaker, identifying a preferred course of action, and designing and implementing mitigation and monitoring. The NGB and ARNG organizations prepare NEPA documents on a wide array of proposals that encompass a broad spectrum of mission-related and support actions and activities. The following are examples:

- Real property master planning

- Real property acquisition, grants of rights, and disposal

- Military construction

- Weapon systems acquisition

- Equipment modernization

- Force management

- Training

- Environmental management planning
- Installation management

3.2.2 Environmental Consequences

Proposed action. No effects on real property resources would be expected to occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Modularization of ARNG forces would include converting several heavy brigades to infantry brigades, resulting in a reduction of more than 50 percent of the ARNG's inventory of tracked vehicles (tanks, Bradley Fighting Vehicles, and armored personnel carriers). ARNG forces would continue to require use of a variety of training lands, however, for an identical number of maneuver brigades and, it is anticipated, possibly slightly fewer other types of organizations. Implementation of the proposed action would not require introduction of any new types of weapons systems or equipment for ARNG use at Active Component or ARNG-controlled ranges and maneuver areas. Lands that previously supported ARNG activities would continue to be managed in a highly similar fashion.

- *Training.* With the elimination of slightly more than half of the ARNG's tracked vehicles, a substantial portion of training in maneuver areas would shift to dismounted infantry. This adjustment alone would not be expected to trigger requirements for acquisition of new training lands. Individual, crew, and squad training would continue to occur at existing locations at approximately the same level of frequency. There would be an increased frequency in collective training of companies and higher units to reach the goal of units' achieving C-1 status on a rotating 6-year cycle basis. It is not anticipated that this change would require alteration of ARNG land holdings or approaches to management of real property.

- *Institutional matters.* Programs for the management of real property resources would not be expected to change. In particular, the ITAM Program would continue to provide management procedures and actions to ensure the sustainable use of real property used for training.

No action alternative. No effects on real property resources would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on real property resources.

3.3 AIR QUALITY

3.3.1 Existing Conditions

Definition of resource. Since 1967 the Clean Air Act (CAA) has evolved from a set of principles to guide states in controlling sources of air pollution to a series of detailed control requirements that the federal government implements and the states administer. The CAA has historically regulated air pollution sources through three primary programs: (1) ambient air quality regulation of new and existing sources through emission limits contained in state implementation plans (SIPs); (2) more stringent control technology and permitting requirements for new sources; and (3) specific pollution problems, including hazardous air pollution and visibility impairment. The 1990 amendments to the CAA not only modified these three programs but also addressed new air pollutants and added a comprehensive operating permit program.

Incorporation. This PEA incorporates by reference the discussion of air quality contained in the Army Transformation PEIS. Specific information is provided below.

Background. The CAA, the primary federal statute regulating air emissions, applies fully to the Army and all its activities. The objectives of CAA are to protect and enhance the quality of air resources; initiate and accelerate a national research and development program to prevent and control air pollution; assist state, tribal, and local governments in the development and implementation of air pollution prevention and control programs; and encourage and assist the development and operation of regional air pollution prevention and control programs. The CAA categorizes regions of the United States as nonattainment areas if air quality within those areas does not meet the required ambient air quality levels set by the National Ambient Air Quality Standards (NAAQS). The NAAQS consist of primary and secondary standards for six "criteria air pollutants": sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. Primary standards are established to protect public health; secondary standards are established to protect public welfare (e.g., plant life, cultural monuments, and wildlife).

States have the authority to establish emission source requirements to achieve attainment of the NAAQS. These requirements may be uniform for all sources or may be specifically tailored for individual sources. To be approved as federally enforceable measures in a SIP, the requirements must be consistent with the CAA. Source emission requirements in SIPs may be established for stationary and mobile sources. Implementation of CAA requirements, for purposes of achieving NAAQS, is achieved primarily through SIPs and various federal programs. The CAA requires states to develop SIPs that establish requirements for the attainment of NAAQS within their geographic areas. SIPs must identify major sources of air pollution, determine the reductions from each source necessary to attain NAAQS, establish source-specific and pollutant-specific requirements as necessary for the area, and demonstrate attainment of NAAQS by the applicable deadlines established in the CAA using any combination of tools. If a state fails to submit a plan that is sufficient to attain the NAAQS, the U.S. Environmental Protection Agency (EPA) is to impose a federal implementation plan for that region. Table C-7, "Currently Designated Nonattainment Areas for Criteria

Pollutants," indicates the compliance status with respect to the NAAQS for selected locales where Army and ARNG installations are located.

The CAA also establishes standards and requirements to control other air pollution problems. Standards for hazardous air pollutants (HAPs), an acid rain reduction program, and a program to phase out the manufacture and use of ozone-depleting chemicals are the other major programs regulating emissions of air pollutants. The prevention of accidental release and minimization of consequences of any such release of extremely hazardous substances, including the substances published under the Emergency Planning and Community Right-to-Know Act of 1986, are also required under the CAA.

Five aspects of the CAA are particularly relevant to the Army's environmental stewardship efforts with respect to air quality. These pertain to stationary sources, mobile sources, the permit program, reduction of HAPs, and the ozone depletion program.

- *Stationary sources.* The CAA establishes a variety of requirements or standards that states apply to stationary emission sources. Requirements or standards have been established for new source performance standards, lowest achievable emission rate, and reasonably available control technology.

- *Mobile sources.* Mobile sources include cars, trucks, planes, vessels, and off-road engines and vehicles. EPA generally has authority to set emission standards for these sources and related controls on their fuels. Federal mobile source requirements established by the 1990 CAA Amendments include automobile emission standards, fuel quality standards, and fleet requirements more strict than those required previously. In particular, some areas must have improved inspection and maintenance programs to ensure that vehicles continue to meet emission standards. Since 1998 the CAA has also required government agencies that own buses or trucks to buy new clean models (e.g., trucks with new engines that reduce particulate emission by 90 percent). Certain state requirements for motor vehicles, off-road vehicles, and fuels are preempted with a provision for a waiver of preemption.

- *Permit program.* Title V of the 1990 CAA Amendments established an operating permit program similar to that of the Clean Water Act for all major stationary sources of air pollution. The CAA permit program is generally administered by the state air pollution control agencies authorized by EPA. Each permit may include a compliance schedule, enforceable emission limits and standards, and requirements for submitting monitoring data. Penalties can be assessed against any source that violates any requirements of its permit. The Title V permit program for major sources is fee-based, and federal agencies such as the Army are explicitly subject to any requirement to pay a fee or charge imposed by a state or local agency to defray the costs of its air regulatory program.

- *Reduction of HAPs.* EPA is required to list all categories of major sources that release any of the 188 chemicals designated by Congress as HAPs in the 1990 CAA Amendments. EPA also reviews and updates the list of chemicals and promulgates emission standards for listed source categories. New and existing major sources of HAPs must comply with applicable National Emission Standards for Hazardous Air Pollutants (NESHAP), which are adopted standards for specified categories of emission sources. Compliance with NESHAP requires a level of emission reduction that can be achieved by a particular source category by implementing Maximum Available Control Technology (MACT). If further emission reduction is necessary to protect public health, EPA may establish health-based standards in addition to MACT.

- *Ozone depletion program.* The 1990 CAA Amendments established a new program to protect the stratospheric ozone layer. The program sets a schedule to phase out the production of most ozone-depleting chemicals such as chlorofluorocarbons (CFCs), halons, and hydrochlorofluorocarbons. Other measures include requiring the use of substitute chemicals that are ozone-friendly, recycling CFCs (e.g., in automobile air conditioners), and labeling products that contain ozone-depleting chemicals.

ARNG organizations have broad compliance responsibilities under the CAA. They must comply with all federal, state, interstate, and local requirements; administrative authorities; and processes and sanctions in the same manner and to the same extent as any nongovernmental entity. This compliance requirement includes any reporting, recordkeeping, permitting requirements, and payment of service charges and fees set forth in regulations or statutes. It also includes cooperating with EPA or state inspections. The ARNG's principal responsibilities under the CAA are as follows:

- Obtain necessary permits.
- Maintain emissions within permitted levels.
- Comply with SIP requirements.
- Ensure that all CFC technicians attend EPA-certified training courses.
- Ensure that all CFC recovery/recycling equipment is certified to EPA standards and venting prohibitions are maintained.
- Manage facilities with asbestos-containing material (ACM) and conduct ACM removals in conformance with the air toxics program requirements.
- Comply with applicable federal controls on mobile sources and their fuel.
- Develop risk management plans where required.
- Maintain all required records and documentation.

- Manage facility construction and modification.

Under Section 176(c) of the CAA, the Army is prohibited from engaging in, supporting, providing assistance for, or approving activities (e.g., issuing a license or permit) that are inconsistent with SIP requirements. This section is known as the General Conformity Rule. According to Section 176(c), activities must conform to an implementation plan's purpose of "eliminating or reducing the severity and number of violations" of NAAQS and achieving "expeditious attainment" of such standards. Such activities must not cause or contribute to a new violation; increase the frequency or severity of an existing violation; or delay timely attainment of any standard, required interim emission reduction, or other milestone. Pursuant to that rule, conformity determinations are required to ensure that state air quality standards will not be exceeded and that an action will comply fully with the SIP. The proponent compares the emission levels of the proposed action to current baseline emissions. Where increases in emission levels exceed thresholds established in the General Conformity Rule, a conformity determination must be prepared. In support of the conformity determination, additional air quality modeling may be required to show more precisely the action's impacts on air quality in the region.

ARNG air quality management. ARNG organizations must consider the effects that planned projects and activities will have on air quality both on- and off-post. Two independent legal requirements address air quality management: (1) NEPA and (2) the general conformity provision of CAA Section 176(c), including EPA's implementation, the General Conformity Rule. Depending on the action and the air quality conformity attainment status of the installation (or other affected property), an installation might have to complete a separate conformity analysis in addition to the NEPA analysis. Applicability of the two requirements must be considered separately. Exemption from one requirement does not automatically exempt the action from the other requirement, nor does fulfillment of one requirement constitute fulfillment of the other. Although installations should integrate compliance efforts to save time and resources, the two requirements are very different, necessitating separate analyses and documentation.

The Army's Air Pollution Abatement Program, set forth in Army Regulation (AR) 200-1 (*Environmental Protection and Enhancement*), includes activities to control emissions and cooperation with appropriate regulatory agencies. The objectives of the program are as follows:

- Identify and monitor air pollution sources, determine types and amounts of pollutant emissions, control pollutant levels to those specified in applicable regulations or to protect health.

- Procure commercial equipment and vehicles with engines that meet applicable standards and regulations and that do not present a health hazard. (Exceptions are those vehicles or engines specifically excluded or exempted by EPA regulations or agreements.)

- Ensure that each piece of military equipment is designed, operated, and maintained so that it meets applicable regulations.

- Monitor ambient air quality in the vicinity of Army activities per applicable regulations.

- Cooperate with EPA and state authorities to achieve the requirements of the CAA 1977 and applicable regulations issued according to this act, applicable state and local air pollution regulations, air pollution control provisions in other federal and state environmental laws and regulations, including the Resource Conservation and Recovery Act (RCRA) of 1976, as amended; the Toxic Substances Control Act (TSCA) of 1976; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980; the Superfund Amendments and Reauthorization Act (SARA) of 1986; and applicable state and local environmental regulations.

- Comply with all federal, state, and local regulations concerning air quality.

3.3.2 Environmental Consequences

Proposed action. No effects on air quality would be expected to occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* The more than 50 percent reduction in heavy vehicles (tanks, Bradley Fighting Vehicles, and armored personnel carriers) could result in an increase of wheeled vehicles in some of the ARNG units. However, the increase in these wheeled vehicles would not result in an offset increase in emissions of criteria pollutant sufficient to exceed the *de minimis* levels established in any of the nonattainment areas. The emissions of criteria pollutants from this exchange of vehicle activity would be expected to conform to each SIP.

- *Training.* Individual, crew, and squad training would continue to occur at existing locations, though at a possibly increased tempo with the inclusion of all maneuver brigades and other forces in a 6-year cycle for achieving C-1 status. The increase in collective training of ARNG units, due to wider achievement by brigade-level organizations of C-1 status, could result in increases in criteria pollution emissions, particularly particulate matter. However, this mild increase in training intensity, distributed across the entire United States, would not be expected to be sufficient to trigger any *de minimis* criteria pollutant level in any of the nonattainment area classifications. The additional collective training exercises, occasionally involving troops and equipment in the field, would not be expected to contravene any SIP.

- *Institutional matters.* Programs for the management of air quality would not be affected by implementation of the proposed action. ARNG organizations would continue to adhere to all federal, state, and local requirements with respect to permitting and operational maters. Construction of new facilities or modifications to existing facilities, which typically trigger compliance actions under the Clean Air Act, are not expected during implementation of the proposed action. Even if

such construction were later to be found necessary, the resultant criteria pollutant emissions from such limited actions would not be expected to exceed the *de minimis* levels of any criteria pollutant in any nonattainment area, and they would not trigger the need for formal conformity determination.

In the future, introduction of any additional combat vehicles, weapons systems, or aircraft or increase in training intensity by ARNG organizations would require analysis under NEPA to determine, on a site-specific basis, the effects, if any, on an area's air quality. In most cases, compliance with NEPA for such new actions could be accomplished with a REC.

No action alternative. No effects on air quality would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on air quality.

3.4 NOISE

3.4.1 Existing Conditions

Definition of resource. *Noise* is generally defined as unwanted sound. It can be any sound that is undesirable because it interferes with communications or other human activities, is intense enough to damage hearing, or is otherwise annoying. Human response to noise varies, depending on the type and characteristics of the noise, distance between the noise source and the receptor, receptor sensitivity, and time of day.

Incorporation. This PEA incorporates by reference the discussion of noise contained in the Army Transformation PEIS. Specific information is provided below.

Background. In general, the military noise environment consists of three types of noise: transportation noise from aircraft and vehicle activities, high-amplitude noise from armor and artillery firing and demolition operations, and noise from firing at small arms ranges.

The most widely used metric for noise is the day-night average sound level (DNL or L_{dn}). The L_{dn} represents energy-averaged sound levels measured by summation and averaging of sound exposure level (SEL) values during a 24-hour period. A penalty of 10 decibels (dB) is assigned to noise events (including aircraft operations) occurring between 10:00 p.m. and 7:00 a.m. The 10-dB penalty compensates for generally lower background noise levels and increased annoyance associated with events occurring at night. L_{dn} is a useful descriptor for noise in two respects. First, it is an average; it fits intuitive concepts when dealing with continuous noise, such as that from a busy highway. Second, because it is a summation of sound energy over a 24-hour period, it is a cumulative metric. For intermittent sound, it represents the total sound being received rather than the sound level at any given time. In this respect, it effectively identifies a "noise dose" for a day.

Noise from transportation sources, such as vehicles and aircraft, and from continuous sources, such as generators, is assessed using the A-weighted DNL (ADNL). The ADNL significantly reduces the measured pressure level for low-frequency sounds while slightly increasing the measured pressure level for some high-frequency sounds. Noise from small arms ranges is assessed using the ADNL. Impulse noise resulting from armor, artillery, and demolition activities is assessed in terms of the C-weighted DNL (CDNL). The CDNL is often used to characterize high-energy blast noise and other low-frequency sounds capable of inducing vibrations in buildings or other structures. The C-weighted scale does not significantly reduce the measured pressure level for low-frequency components of a sound.

Army noise management. The Army's Environmental Noise Management Program (ENMP) is described in Chapter 7 of AR 200-1 (*Environmental Protection and Enhancement*). The Army's ENMP implements federal law concerning environmental noise generated by ARNG activities, including aircraft operations and range firing. The goals of the ENMP are to protect the health and welfare of people on and off installations affected by ARNG-produced noise and to reduce community annoyance from environmental noise. The program seeks to achieve compliance with applicable noise regulations in a manner consistent with an installation's mission.

The ENMP requires ARNG organizations to implement environmental noise policies to identify and control noise effects. Among these policies is the requirement to make noise predictions for long-range planning purposes. As a part of the ENMP, noise contour maps are prepared. The maps delineate up to three different noise zones, which are based on the expected percentage of the population that would be highly annoyed by environmental noise. These noise zones are determined through mathematical modeling and computer simulations. The associated noise levels for each zone are shown in Table C-8, "Noise Level Zones and Annoyance."

Noise occurring at Army and ARNG installations and subject to management activities may be produced by several types of activities. Often, the source of noise is an important determinant in applying suitable management actions. Noise occurring "naturally" in the environment, or ambient noise, generally is not amenable to management. This type of noise is produced by inanimate and biological components of nature such as wind, rainfall, movement of vegetation, and animal activities. Man-made noise not associated with military training activities, such as hunting, logging activities, vehicular traffic, and commercial aircraft, can often be controlled to some extent as to time and place. Noise directly attributable to military training includes activities such as weapons firing (small arms and large caliber), vehicular movements, and aircraft operations. In some instances, off-site sources of noise (timber operations, road traffic, off-road vehicles, recreational hunting, and industrial sources) contribute to elevation of natural background noise. At a given installation, all these types of noise must be taken into account when assessing and managing the noise environment.

Consideration of the noise environment could shape the manner in which ARNG activities are carried out. For instance, firing of large caliber weapons produces noise both at the firing point and in an impact area. Consequently, consideration must be given

to potential noise receptors with respect to both locations. In a similar vein, consideration must be given to flight paths for fixed wing and rotary aircraft so that potential noise receptors are not unduly affected.

3.4.2 Environmental Consequences

Proposed action. Minor long-term beneficial effects on the noise environment would be expected to occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Elimination of more than half of the ARNG organizations' tracked vehicles would reduce the number of heavy, noisy vehicles with respect to both engine noise and organic weapons (the Abrams tank operates with a 120-mm smooth-bore cannon and the Bradley Infantry Fighting Vehicle operates with a 25- mm chain gun and the TOW antitank missile). Plans for types and quantities of vehicles in the infantry brigades have not been finalized; operations involving Humvees and medium trucks would offset some of the noise reductions attributable to elimination of tanks and other tracked vehicles. Additional changes in the quantities of noise-producing weapons systems would also occur. Numerous personnel in units currently equipped with various towed artillery and air defense weapons systems would be transferred and retrained for duties in other types of units. That is, excess field artillery, air defense, engineer, armor, and certain logistics units would be converted to military police, transportation, civil affairs, special operations, biological detection, and military intelligence units. Reductions in notably noisy weapons systems of the former types of units (e.g., artillery and air defense) would be greater than the small arms (and less noisy) weapons systems of the latter types of units. Reliable quantification of the amount of reduction, however, is not possible.

- *Training.* With the elimination of more than half of ARNG organizations' tracked vehicles, a substantial portion of training in maneuver areas would shift to dismounted infantry. Training use of fewer heavy weapons and more small arms would have a small, positive effect on the noise environment, as discussed immediately above. For the most part, individual, crew, and squad training would continue to occur at existing locations, though at a possibly increased tempo with the inclusion of all maneuver brigades and other forces in a 6-year cycle for achieving C-1 status. The potential increase in noise from training for the ARNG units would be offset by the involvement of fewer tracked vehicles.

- *Institutional matters.* Programs for the management of noise would not be expected to change.

Introduction of any additional combat vehicles, weapons systems, or aircraft or unusual increase in training intensity by ARNG organizations would require analysis under NEPA to determine, on a site-specific basis, the effects, if any, on an area's noise environment as encompassed by the local environmental noise management program. In

most cases, compliance with NEPA for such new actions could most likely be accomplished with a REC.

No action alternative. No effects on noise would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on the noise environment.

3.5 WATER RESOURCES

3.5.1 Existing Conditions

Definition of resource. *Water resources* include surface water, groundwater, wetlands, and floodplains, which can be described as follows.

- *Surface water.* Surface water resources consist of lakes, rivers, and streams. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale. Storm water flows, which can be exacerbated by high proportions of impervious surfaces (e.g., buildings, roads, and parking lots), are important to the management of surface water. Storm water is also important to surface water quality because of its potential to introduce sediments and other contaminants into lakes, rivers, and streams.

- *Groundwater.* Groundwater consists of the subsurface hydrologic resources. It is an essential resource often used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate.

- *Wetlands.* Wetlands are areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and that under normal conditions do support) a prevalence of vegetation typically adapted for life in saturated soil conditions.

- *Floodplains.* Floodplains are areas of low-level ground present along a river or stream channel. Such lands might be subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding depends on topography, the frequency of precipitation events, and the size (areal extent) of the watershed above the floodplain. Federal, state, and local regulations generally limit development in floodplains to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

Incorporation. This PEA incorporates by reference the discussion of water resources contained in the Army Transformation PEIS. Specific information is provided below.

Regulatory regime: Clean Water Act. ARNG activities subject to Clean Water Act (CWA) regulation include activities involving the collection and discharge of effluents (e.g., discharging pollutants from a point source into waters of the United States) or construction activities near waterways or wetlands. Principal sections of the CWA that are of particular relevance to Army activities include the following:

- *CWA § 303 (Water Quality Standards and Implementation Plans).* Section 303(d) requires states to identify waters that do not meet or are not expected to meet water quality standards even after technology-based or other required controls are in place. States establish a priority ranking for such waters, taking into account the severity of the pollution and the uses to be made of such waters.

- *CWA § 307 (National and Local Pretreatment Standards).* Facilities that discharge to publicly owned treatment works (POTWs) are excluded from National Pollutant Discharge Elimination System (NPDES) permitting requirements but are subject to national general pretreatment standards (at 40 CFR Part 403), applicable categorical pretreatment standards (specified in 40 CFR Parts 405–471), and state or local pretreatment standards. Facilities must sample the effluent and submit reports on the results of such sampling at a frequency specified in their permits. Monitoring reports must be submitted to EPA, states, or POTWs with approved pretreatment programs. The 1992 Federal Facility Compliance Act added provisions for federally owned treatment works. These facilities have an NPDES permit and treat influent that is composed of mostly domestic sewage. The 1992 act extends to a federally owned treatment works the so-called Domestic Sewage Exclusion from the definition of "solid waste," provided the facility meets all specified conditions.

- *CWA § 308 (Inspections, Monitoring, and Entry).* EPA, state agencies, or their authorized representatives (e.g., contractors) have broad authority to conduct compliance inspections at any premises on which an effluent source is located or in which any records required to be maintained under the CWA are located. Inspectors may have access to any records, inspect any monitoring equipment, and sample any effluent to check compliance with NPDES permit requirements, water quality standards, pretreatment standards, effluent limitations, or toxic standards.

- *CWA § 313 (Federal Facilities Pollution Control).* Each federal agency that has jurisdiction over any facility or is engaged in activity resulting in the discharge or runoff of pollutants is subject to and must comply with all federal, state, interstate, and local requirements and administrative authorities for the control and abatement of water pollution. These requirements include adhering to any reporting, recordkeeping, or permitting requirements. If the President determines it to be in the paramount interest of the United States, he may exempt any effluent source of any department, agency, or instrumentality in the Executive Branch from compliance with any requirements of the CWA for a 1-year period, except requirements under the National Standards of Performance (CWA § 306) and the Toxic and Pretreatment Effluent Standards (CWA § 307). Exemptions are

renewable annually. Furthermore, CWA § 313 waives the traditional immunity of the federal government and requires federal facilities to comply with federal, state, interstate, and local water pollution controls. Requirements include compliance with EPA or state inspections and all applicable federal, state, interstate, and local substantive and procedural requirements (including recordkeeping, reporting, payment of reasonable service charges, and permits). CWA § 313 exempts federal employees from civil penalties.

- *CWA § 402 (National Pollutant Discharge Elimination System).* Point source discharges of wastewater must comply with requirements established by an NPDES permit issued by EPA or a state agency that has an approved NPDES program. NPDES permits contain water quality-based and/or technology-based standards for effluent discharges (specified in 40 CFR Parts 405–471 or by the best professional judgment of the permit writer), monitoring requirements, analytical testing methods, and reporting requirements. Dischargers must submit Discharge Monitoring Reports that record flow measurement, sample collection data, and laboratory test results on a quarterly or monthly basis. Noncompliance reports must be submitted quarterly or monthly stating the cause of the noncompliance, period of noncompliance, and plans to eliminate recurrence of the incident. Point source storm water discharges that are associated with certain industrial activities or are designated by EPA for contributing to a violation of water quality standards also require a permit.

- *CWA § 404 (Permits for Dredged or Fill Material).* Facilities that discharge dredged or fill materials into navigable waters must apply for a permit issued by the U.S. Army Corps of Engineers (USACE). EPA may restrict or deny the dredging or filling of any site where the activity could have an adverse effect on the environment. States may apply for the authority to implement the CWA § 404 program. The USACE, however, retains authority over navigable waters within the state. Under limited circumstances, the discharge of dredged or fill materials, as part of a federal project specifically authorized by Congress, is not prohibited by or subject to regulation under CWA § 404.

- *CWA § 405 (Permits of Sludge Management).* All works that treat domestic sewage are required to meet federal requirements for the use and disposal of sewage sludge through land application, surface disposal, or incineration. These requirements are incorporated into permits issued under CWA § 402; under the appropriate provisions of other legislation (e.g., Solid Waste Disposal Act; Safe Drinking Water Act; Marine Protection, Research, and Sanctuaries Act; Clean Air Act); under EPA-approved state sludge management programs; or, in the case of a treatment works that is not subject to the above requirements, in a sludge-only permit.

Regulatory regime: Safe Drinking Water Act. The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants in drinking water. The law authorizes EPA to develop national drinking water standards and to undertake joint efforts with federal, state, and tribal authorities to ensure

compliance with the standards. The SDWA also directs EPA to protect underground sources of drinking water through the control of underground injection of liquid wastes.

To meet these objectives, EPA has developed primary and secondary drinking water standards under its SDWA authority. EPA and authorized states and tribes exercising delegated authorities enforce the primary drinking water standards. The standards identify contaminant-specific concentration limits that apply to certain public drinking water supplies. Primary drinking water standards consist of maximum contaminant level goals (MCLGs), which are non-enforceable health-based goals, and maximum contaminant levels (MCLs), which are enforceable limits. MCLs are set as close to MCLGs as possible, considering cost and feasibility of attainment.

Management of water resources. Historically, the Nation's clean water programs have been based primarily on technology-based controls. More recently, regulators have shown a trend toward water quality-based controls implemented on a watershed basis. This shift from technology-based controls will mean that nontraditional sources of water quality impairment such as nonpoint source pollution (polluted runoff, which is acknowledged as a major source of contaminants in water) will be targeted. The ARNG has embraced this concept and is managing its lands on an ecosystem basis.

To address increasing concerns over the availability and reliability of water supplies, a number of planning and management initiatives have emerged in recent years, many of which are being implemented on Army and ARNG installations. Water efficiency measures seek the efficient use of water through behavioral, operational, or equipment changes. Water recycling, reclamation, or reuse measures include use of treated wastewater for beneficial purposes, such as landscape irrigation, industrial processes, toilet flushing, and replenishing of a groundwater basin (referred to as groundwater recharge). Water is sometimes recycled and reused on-site; for example, when a facility recycles water used for cooling processes. A common type of recycled water used for nonconsumptive purposes is water that has been reclaimed from municipal wastewater, or sewage. Drought planning and management involves major water users' developing drought contingency plans that emphasize preparedness, coordination, risk management, and mitigation measures.

Executive Order 12902, *Energy Efficiency and Water Conservation at Federal Facilities*, calls for the implementation of water conservation measures by federal agencies. Examples of measures that are increasingly being adopted by the Army pertain to universal metering, water accounting and loss control, costing and pricing, information and education programs, water-use audits, retrofits, water pressure management, landscape efficiency, reuse and recycling, water-use regulation, and integrated resource management. The Army adheres to this Executive Order and incorporates its principles into various installation plans and regulations.

Executive Order 11990, *Protection of Wetlands*, orders federal agencies to provide leadership and take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Executive Order 11988, *Floodplain Management*, requires that federal agencies take action to

reduce the risk of flood loss; to minimize the impact of floods on human safety, health, and welfare; and to restore and preserve the natural and beneficial values of floodplains. The ARNG adheres to these Executive Orders with its construction projects and as circumstances arise. In addition, wetlands and floodplain management are integral components of Integrated Natural Resource Management Plans and the Integrated Training Area Management (ITAM) program.

The ARNG's natural resources management programs ensure that wetlands, floodplains, and their associated riparian areas are protected and enhanced. Integrated Natural Resources Management Plans provide range operators and natural resource managers with strategies and practices to improve land use on ARNG installations and to ensure the proper protection, enhancement, and management of surface water and groundwater resources. Two elements of the ITAM Program support essential environmental management of installation aquatic resources—Range and Training Land Assessment (RTLA) and Land Rehabilitation and Maintenance (LRAM). Through constant monitoring and evaluation of the RTLA program, land managers and trainers are able to assess the quality of wetlands and bodies of water and make decisions regarding training intensity and location. LRAM implements state-of-the-art best management practices to solve specific environmental management problems, such as loss of vegetation, soil erosion, and streambank destabilization, and to protect installation water resources. The ITAM Program seeks optimum sustainable use of training lands by inventorying and monitoring land conditions, integrating training requirements with carrying capacity, educating land users so that they can minimize their adverse impacts, and providing for land rehabilitation and maintenance.

The Army-wide program of completing planning level surveys (PLSs) for flora, fauna, vegetative communities, and threatened and endangered species at each installation—a program in which the ARNG participates—is another means of ensuring sound management of water-dependent natural resources. Identification and location of unique aquatic species, aquatic habitats, wetland areas, and wetland species allows environmental managers to make decisions on training intensity and location. Knowledge of the species and aquatic habitats ensures the protection and enhancement of these resources.

The ARNG implements watershed-based management of its land resources that protects the water bodies within each installation watershed. Watershed management incorporates analysis of land uses occurring in the watershed and evaluation of the current condition of natural resources to ensure that ongoing and planned activities are compatible with the natural environment. Watershed-based analysis identifies situations that are not sustainable for the local area and its natural resources. The integrated natural resource management program is one means of documenting these analyses and incorporating the results into management prescriptions for the installation.

3.5.2 Environmental Consequences

Proposed action. Long-term minor indirect benefits on water resources would be expected, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* There would be no newly acquired weapons systems or equipment for use at existing ranges and maneuver areas. The reduction in the number of tracked vehicles by more than 50 percent would provide a long-term minor indirect benefit to surface water quality. When operated off-road, tracked vehicles tend to crush vegetation and compact soil, thus affecting the ability of vegetative cover to slow the conveyance of precipitation to surface waters. If there were less harm to vegetation and soils, there would be less sedimentation of surface waters.

- *Training.* The proposed action would not be expected to increase the amount of individual, crew, and squad training. Collective training of larger units (company and above) would occur slightly more frequently due to the inclusion of all maneuver brigades and other brigade-sized units in the 6-year cycle for achieving C-1 status. Most of this training would occur at the largest of ARNG and Army installations. These tend to be the locations that, because of their high usage rates, obtain the fullest degree of resource allocations for the protection of environmental resources, including water resources. The slight increase in training at these locations, distributed across the substantial land holdings of the Army and the ARNG, would not be expected to affect water resources.

- *Institutional matters.* Programs for the management and stewardship of water resources would not be expected to change or to result in different effects on water resources. While ARNG organizational structures and missions would change, regulatory regimes (e.g., Clean Water Act, Safe Drinking Water Act) would continue without alteration.

No action alternative. No effects on water resources would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on water resources.

3.6 GEOLOGY AND SOILS

3.6.1 Existing Conditions

Definition of resource. *Geological resources* consist of the earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography; soils; geology; minerals; and, where applicable, paleontology.

- *Topography*. Topography pertains to the general shape and arrangement of a land surface, including its height and the position of its natural and artificial features.

- *Soils*. Soils are the unconsolidated materials overlying bedrock or other parent material. They are typically described in terms of their complex type, slope, and

physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land uses.

- *Geology*. Geology, which concerns itself with the study of the earth's composition, provides information on the structure and configuration of surface and subsurface features. Such information derives from field analysis based on observations of the surface and borings to identify subsurface composition. Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological information helps in the assessment of groundwater quality, quantity, and movement.

- *Minerals*. In a limited number of cases, the presence, distribution, quantity, and quality of mineral resources might affect or be affected by a proposed action. Understanding of the proposed action and minerals is useful in keeping decisionmakers fully informed of potential socioeconomic and natural resources consequences.

- *Paleontology*. The presence of fossils and human artifacts presents an opportunity for scientists to gain a better understanding of history. In a very limited number of cases, a proposed action might have the potential to damage or destroy paleontological resources. Such resources must be located, quantified, and assessed for their value (including their possible value as cultural resources) before implementation of the proposed action.

Incorporation. This PEA incorporates by reference the discussion of geology and soils contained in the Army Transformation PEIS. Specific information is provided below.

General geologic settings. Table C-9, "Army and ARNG Installations and Corresponding Ecoregion Provinces," identifies a representative sample of Army and ARNG installations used by ARNG forces and the ecoregions in which those installations are found. Information on general geologic settings, landforms, topography, and soils that occur in various ecoregions of the United States is provided below. Individual installations would consider surficial resource needs and effects while considering sensitive or limiting geologic features that occur in specific regions (karst regions, susceptibility to earthquakes, or soil erosion). Soil types are explained in Table C-10, "Soil Types."

The following paragraphs describe the general geologic settings of selected Army and ARNG installations.

- *American Semi-desert and Desert (Fort Irwin).* The topography of this region is characterized by extensive gently undulating plains with low mountains and buttes rising abruptly. The elevations of the valleys range from 280 feet below sea level to 4,000 feet above sea level, where the mountains can reach as high as

11,000 feet. Rocky mountains rise abruptly from outwash aprons and alluvial faces. Gravel or bare rock covers the ground near the bases of some mountains. Because of heavy, violent desert rainstorms, very little soil is allowed to accumulate on the steep mountain slopes, and bare rock is often exposed at the surface. Soil types found on the older alluvial fans, terraces, and better-drained basins are entisols; throughout the rest of the region aridisols predominate. Both of these soils are subject to erodibility by water and wind and are best maintained with natural vegetation.

- *Chihuahuan Desert Province (Fort Bliss).* Several topographic zones are identified in this region, each with characteristic relief and soil assemblages. A broad, relatively flat desert basin lies between the Organ and Franklin mountains. The surface of this intermontane basin is characterized by 1- to 12-foot-high semi-stabilized coppice sand dunes moderately covered with mesquite. There are several mountainous regions, including the Organ Mountains, Hueco Mountains, and Sacramento Mountains. These mountains consist of relatively low, subrounded hills that blend gently into the Otera mesa. Mostly desert, this province has very few permanent streams or rivers. The Rio Grande and Pecos rivers and a few of their larger tributaries originate in the more humid provinces and are the only perennial streams. The area consists of undulating plains with elevations near 4,000 feet, with somewhat isolated mountains rising 2,000 to 5,000 feet. Washes that are dry most of the year fill with water after rain. Basins with no outlets drain into shallow playa lakes that dry up during rainless periods. Extensive dunes of silica sand are found in parts of this province, and dunes of gypsum are notably found in southern New Mexico. Isolated buttes and small beds of blackish lava are present. There is considerable variability in soil parent material, development, texture, age, and suitability of the soils in this region, and soil types include aridisols and entisols. Soils resulting from weathering of limestone, sandstone, and igneous bedrock are found, as well as eolian materials from other areas. The soils are mostly calcareous and alkaline, have moderate permeability, and are moderately well drained, with the exception of soils having impervious caliche layers or bedrock near the surface. Certain soils have high potential for sheet and gully erosion.

- *Coastal Trough Humid Tayga (Fort Richardson).* Smooth and irregular plains surrounded by high mountains are found in this province. Cook Inlet is characterized by level to rolling topography, with areas of ground moraine and stagnant ice, drumlin fields, eskers, and outwash plains. The low-lying areas are typically less than 500 feet above sea level, with a local relief of 50 to 250 feet. The Copper River Lowland is a broad basin of rolling and hilly moraines and nearly level alluvial plains on the site of a Pleistocene glacial lake. With an altitude of 1000 to 2000 feet, it is cut by the Copper River and its tributaries, which form steep-walled canyons 100 to 300 feet deep.

- *Continental Eastern Broadleaf Forest (Forts Campbell, Drum, Knox, Dix, and Chaffee).* This area consists of mostly rolling hills with some flat areas and glaciated areas in the north. Low rolling hills, dissected plateaus, and basins are

found throughout this region. Parts of Kentucky are characterized by karst topography with underground cave systems, sink holes, and truncated drainage basins. Sheet erosion and locally severe gully erosion have been reported in areas where the soil is disturbed. Elevations range from 80 to 1,650 feet. Soils in the north tend to be alfisols; toward the south, they grade into ultisols; toward the interior, calcification sets in and forest soils give way to the darker soils of the grasslands (mollisols). All of these soil types are moderately susceptible to soil erosion, depending on the local topography and climate conditions.

- *Great Plains Steppe and Shrub (Fort Sill).* Typical of this region are irregular plains with a relief of less than 300 feet. Elevations increase gradually from the east to the west and range from 1,600 feet to 3,000 feet. Slopes on these dissected plains range from nearly level to gently sloping, but slopes in the valleys are short and steep. The Wichita Mountains, in southwestern Oklahoma, rise as much as 1,000 feet above the surrounding plains. The soils are mostly mollisols with some alfisols.

- *Great Plains-Palouse Dry Steppe (Fort Carson, Pinon Canyon).* Characterized by rolling plains and tablelands, this region shows moderate relief with a gradual slope eastward from an altitude of 5,500 feet near the foot of the Rocky Mountains to 2,500 feet in the more central states. The area is mostly flat, with occasional valleys, canyons, and buttes. The distinctive landscape of the adjacent Pikes Peak Region is the result of the great mountain-building episode that occurred during the Laramide Period more than 60 million years ago. As a consequence, this region might be seismically active. Twenty million years later, during the Pleistocene Epoch, accelerated erosion of sediments affected by alpine glacier meltwater resulted in topographical variations along the Front Range. The most commonly occurring soil types are aridisols and entisols. Soil erodibility is moderate to severe for many of the soils in the region. Landslides caused by water transmission through shale bedrock are evident. The unstable clay formation movement generated by variations in moisture content and temperature requires special engineering design for road and building construction.

- *Hawaiian Islands (Schofield Barracks, Pohakuloa Training Area).* The Hawaiian Islands are volcanic islands in various stages of erosion. The Schofield Plateau is a saddle-shaped upland area with a basalt substrate. The topography ranges from nearly flat to hilly and mountainous; elevations range from sea level to more than 4,000 feet. Coastlines are mostly rocky and rough. The ground is highly porous, being composed of lava, so surface streams are not abundant. Soils on the islands are a complex group of leached ultisols and oxisols, inceptisols, and rocky highlands and coastlines with no soil. The oxisols are considered the most important agricultural soils of the state and generally consist of red, well-compacted volcanic ash and dark red and brown silty clays. The soils are high in volcanic matter, magnesium, calcium, and iron. Permeability is moderate with slow surface water runoff. The soil erosion hazard is very slight in level areas.

- *Intermountain Semi-desert (Orchard Training Area, Yakima Training Center).* This region covers the plains and tablelands of the Columbia-Snake River plateaus and Wyoming Basin. The plateaus, at an elevation of about 3,000 feet, are surrounded by lavas that have been folded or faulted into ridges. Toward the south, the plateaus grade into the basins and ranges of the Intermountain Desert Province. Sloping alluvial fans at the edges of the basins merge into flat plains in the center. Badlands can be found in the dissected areas along the outer edges of the region. Extensive alluvial deposits are found in the floodplains or streams and in the fans at the foot of mountains. There are numerous dry lake beds and extensive eolian deposits are present, including both dune sand and loess. Loess deposits in the Columbia River Basin are up to 150 feet thick, and soils developed from them are complex. Aridisols dominate all basin and lowland areas, and mollisols are found at higher elevations.

- *Outer Coastal Plain Mixed Forest (Forts Bragg, Polk, Stewart, and A.P. Hill; Camps Blanding and Shelby).* This province is composed of flat and irregular Atlantic and Gulf Coastal Plains down to the sea. Most of the area is gently sloping, with some local relief of less than 300 feet. There are numerous streams and lakes, most of them including sluggish marshes and swamps. Soil types in this province include ultisols, spodosols, and entisols. Most of the soils tend to be wet, acidic, and low in major plant nutrients. The soils are derived mainly from coastal plain sediments ranging from heavy clay to gravel, with sandy materials predominant. Silty soils are found on level expanses, and sands are prevalent in hilly areas. Many of the soils of this area are classified by the Natural Resources Conservation Service (NRCS) as highly erodible. Soils unprotected by vegetation are susceptible to water erosion from moderate and intense storms. Gullying is the most prevalent and prominent type of erosion, but sheet and rill erosion can be found in the early stages of an erosional event.

- *Pacific Lowland Mixed Forest (Fort Lewis).* This region lies in a north-south depression between the Coast Ranges and the Cascade Mountains. Elevations range from sea level to 1,500 feet. In the Willamette Valley, nearly level to gently sloping floodplains are bordered by dissected high terraces and hills. In the Puget Sound Valley, moderately dissected tableland is covered by glacial till, glacial outwash, and lacustrine deposits. Some isolated hills and low mountains are found. Most soils are strongly leached acid inceptisols and ultisols. A common soil characteristic is somewhat excessively drained, gravelly sandy loam up to 2 feet thick. A less commonly found soil is composed of slowly decomposing vegetative matter, forming a heavy surface deposit, where calcium, sodium, and potassium are leached out by organic acids.

- *Prairie Parkland, Temperate (Fort Riley).* Both prairie and deciduous forest are found in this region. The topography of the region is mostly gently rolling plains, but steep bluffs border some valleys. Some areas are nearly flat; others have rounded hills. Elevations range from 300 to 2,000 feet. Bedrock in this region is primarily limestone and shale. Soils of the prairies are mollisols, which have black, friable, organic surface horizons 6 to 12 inches thick, overlying nearly

impervious clays. Grass roots deeply penetrate these soils. These soils can be the most productive of the great soil groups.

- *Southeastern Mixed Forest (Forts Benning, McClellan, and Pickett).* This region includes the Piedmont and the Gulf Coastal Plains, and most of the area has gentle slopes. On the Gulf Coastal Plain, local relief of 100 to 600 feet is seen; on the Piedmont, local relief varies from 300 to 1,000 feet. Numerous streams are found in the region, most of them sluggish. There are also numerous lakes, swamps, and marshes. Soils in the region include strongly leached ultisols and vertisols. The vertisols are clayey soils that form wide, deep cracks when dry. Ultisols are rich in oxides of both iron and aluminum and poor in many of the nutrients essential for successful agricultural production. Inceptisols are found on floodplains of major streams and are good agricultural soils.

- *Southwest Plateau and Plains Dry Steppe and Shrub (Fort Hood).* Found in this region are flat to rolling plains and plateaus with steep bluffs along the creeks. The Stake Plains of Texas are found in this region. Elevations range from sea level to 3,600 feet on the Edwards Plateau, to higher near the Rocky Mountain Piedmont. A mesa-and-butte landscape is characteristic of certain parts. Bedrock in this region includes interbedded limestone, sand, clay, and shale. Soils in this region are varied and include entisols in the savanna area, mollisols in the buffalo grass area, and some alfisols. Soil may be shallow to moderately deep clayey soil found in humid subtropical regions underlain by limestone bedrock. The soils are generally plastic and calcareous. They have a relatively low permeability and high shrink-swell potential and are corrosive to ferrous metals. The plateau areas have a greater soil thickness with thinning at the ridgelines and steep slopes.

3.6.2 Environmental Consequences

Proposed action. Long-term minor beneficial effects on geology and soils would be expected, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Table 3-1 identifies the characteristics of principal vehicles relative to their capacity to affect soils. Although the ground pressures of the Abrams Main Battle Tank, Bradley Infantry Fighting Vehicle, and Humvee do not widely differ, their potentials to affect soils through vegetation loss and compaction are distinguishable, as reflected in their Vehicle Severity Factors and turning radii. Elimination of more than half of the tanks, Bradley Fighting Vehicles, and armored personnel carriers now fielded to ARNG organizations would result in a beneficial reduction of effects on soils. This outcome would be more pronounced at installations that have soils susceptible to erosion.

Table 3-1
Comparison of Vehicle Characteristics

Attribute	Stryker[1] (IAV)	M1A2 Abrams Tank	M998 Truck (HMMWV)	M2A2 Bradley (IFV)
Gross weight (lb)	28,000–41,000	140,000	10,300	50,000
Movement	8 wheels	Tracked	4 wheels	Tracked
Ground pressure (psi)[2]	35.3	15.4	17.0	9.3
VSF[3]	0.86	1.0	0.28	0.86
Maximum speed (mph)	62	42	55	45
Turn radius (ft)	51	Pivot	26.5	Pivot

Photographs and additional information on these vehicles are at http://www.army.mil/fact_files_site/index.html.
[1] "Stryker" is the name given to the Army's Interim Armored Vehicle being fielded as part of the Interim Force in the Army's Transformation Program.
[2] Ground pressure value calculations (in pounds per square inch) are based on tire inflation for highway, cross-country, or snow/mud/sand travel. Tires inflated for highway travel produce the greatest ground pressure. The IAV ground pressure shown in the table is for an Infantry Carrier Vehicle with tires inflated for highway travel.
[3] The vehicle severity factor (VSF) identifies the degree to which land is affected by a vehicle, thereby causing potential erosion. The VSF reflects effects on vegetation and erosion based on activities such as traffic, turning, accelerating, and "digging in." Based on subject matter expertise, experience, and consensus, each VSF is normalized to an M1A2 Abrams Main Battle Tank, which is assigned a VSF of 1.0. VSFs are an input of the Army Training and Testing Area Carrying Capacity (ATTACC) model, which is used to measure and predict the amount of training and other environmental impacts that a given parcel of land and its associated ecosystem can accommodate without jeopardizing its environmental sustainability.
Source: *Final Environmental Impact Statement for 2nd Armored Cavalry Regiment Transformation and Installation Mission Support, Joint Readiness Training Center (JRTC) and Fort Polk, Louisiana, and Long-Term Military Training Use of Kisatchie National Forest Lands*, January 2004.

- *Training.* The conversion of nine heavy brigades to infantry brigades would increase the number of dismounted infantry operating on maneuver areas. Given the diversity and wide distribution of training area resources, however, this change in training would not be expected to produce any measurable effects on geology or soils.

- *Institutional matters.* Protection and management of soil resources on representative installations is a cooperative effort among many interests. ITAM Programs quantify and mitigate the effects of training on vegetation, soils, and wildlife. Range Control Offices at the installations manage access of units to training lands. The positive effects associated with management programs that would continue would not be expected to change.

No action alternative. No effects on geology and soils would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on geology and soils resources.

3.7 BIOLOGICAL RESOURCES

3.7.1 Existing Conditions

Definition of resource. *Biological resources* comprise naturally occurring and cultivated vegetative species and domestic and wild animal species and their habitats. Sensitive biological resources include plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) under the Endangered Species Act or by a state agency pursuant to state law or regulation. Sensitive species also include species identified by the FWS as candidates for possible listing as threatened or endangered pursuant to the Endangered Species Act (ESA). Biological resources also include wetlands, which are important because they provide essential breeding, spawning, nesting, and wintering habitats for a major portion of the Nation's fish and wildlife species. Wetlands are protected as a subset of the "waters of the United States" identified in Section 404 of the Clean Water Act. The USACE defines wetlands as those areas that are inundated or saturated with groundwater or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

Incorporation. This PEA incorporates the discussion of biological resources contained in the Army Transformation PEIS. Specific information is provided below.

Vegetation and wildlife. Discussed below are general wildlife species and vegetation types that occur in the various ecoregions in which Army and ARNG installation are located. Installation managers consider specific species that occur locally, particularly any threatened and endangered species, to identify possible adverse effects due to military activities.

- *American Semi-desert and Desert (Fort Irwin).* Vegetation is typically sparse, consisting of cacti and thorny shrubs. Thornless shrubs are also found; herbaceous plants may appear after infrequent rain. Creosote bush (*Larrea tridentata*), cholla cactus (*Opuntia* spp.), and saltbush (Atriplex spp.) may be locally abundant. Ocotillo (*Fouquieria splendens*) and Joshua tree (*Yucca brevifolia*) inhabit higher-elevation sites. Desert mountaintops are virtually devoid of vegetation. Ephemeral shallow playa lakes are found in basins. These salty lakes support several different zones of vegetation that encircle the lake, arranged by degree of salt tolerance (Bailey, 1995). Desert mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and peccary (*Pecari angulatus*) survive in some desert habitats. Carnivores include the desert kit fox (*Vulpes macrotis*) and coyote (*Canis latrans*). Predators depend on populations of nocturnal burrowing animals such as kangaroo rats (*Dipodomys* spp.), pocket mice (*Perognathus* spp.), and antelope ground squirrel (*Ammospermophilus leucurus*). Some bird species thrive in desert conditions; for example, cactus wren (*Campylorhynchus brunneicapillus*), roadrunner (*Geococcyx californianus*), loggerhead shrike (*Lanius ludovicianus*), and Gambel's quail (*Callipepla gambelii*). Many different species of snakes and

lizards make the desert their home. Some species of pupfish (*Cyprinodon* spp.) are adapted to the highly saline lakes in the region.

- *Chihuahuan Desert Province (Fort Bliss).* Shrubs, cacti, and short grasses predominate in the region. Honey mesquite (*Prosopsis glandulosa*) and creosote bush may form extensive open stands. The prickly pear cactus (*Opuntia* spp.) occurs with several different species of yucca (*Yucca* spp). Grama grass (*Bouteloua* spp.) is the dominant grass species. Cottonwood trees (*Populus* sp.) are found along perennial streams. Junipers (*Juniperus* spp.) and oaks (*Quercus* spp.) create mixed stands at the highest elevations (Bailey, 1995). Large herbivores, such as mule deer, pronghorn antelope, and peccary, are distributed throughout the region. Small mammals present include blacktail jackrabbit (*Lepus californicus*), desert cottontail (*Sylvilagus auduboni*), kangaroo rats, and wood rats (*Neotoma* spp). Coyote and bobcat (*Lynx rufus*) are the two main mammalian predators. A diverse bird fauna inhabits the region. One of the most common species is the black-throated sparrow (*Amphispiza bilineata*). Roadrunner, quail (*Callipepla* spp.), hawks, owls, and golden eagle (*Aquila chrysaetos*) are also widespread. Reptiles are abundant in the Chihuahuan desert. Texas horned lizard (*Phrynosoma cornutum*), common chuckwalla (*Sauromalus ater*), and several species of rattlesnakes (*Crotalus* spp.) might be encountered.

- *Continental Eastern Broadleaf Forest (Forts Campbell, Drum, and Knox).* This ecoregion is dominated by broadleaf deciduous forest. Northern reaches of this ecoregion feature forests with maple (*Acer* spp.), American beech (*Fagus grandifolia*), and basswood (*Tilia americana*) as dominant species. Tulip poplar (*Liriodendron tulipifera*), elm (*Elmus* spp.), and sweetgum (*Liquidambar styraciflua*) are often found in wetter sites (Bailey, 1995). In the southern and western portions of this ecoregion, maple and beech forests grade into more drought-resistant oak-hickory (*Quercus* spp.–*Carya* spp.) forests. Oak-hickory stands also occur in drier sites with poor soils throughout the region. The understory is usually well developed and includes species such as dogwood (*Cornus* spp.), sassafras (*Sassafras albidum*) and hornbeam (*Carpinus caroliniana*). Deciduous and evergreen shrubs are also present. Wildflowers are abundant on forest edges and open oak savannas. Whitetail deer (*Odocoileus virginianus*) is the most abundant large game species. Gray squirrels (*Sciurus carolinensis*) and fox squirrels (*Sciurus niger*), eastern chipmunk (*Tamias striatus*), white-footed mouse (*Peromyscus leucopus*), and raccoon (*Procyon lotor*) are common in this area. Resident birds, such as the blue jay (*Cyanocitta cristata*) and wild turkey (*Meleagris gallopavo*), are found year-round. During the summer, migratory birds, such as the scarlet tanager (*Piranga olivacea*) and summer tanager (*Piranga rubra*), rose-breasted grosbeak (*Pheucticus ludovicianus*), red-eyed vireo (*Vireo olivaceus*), and ovenbird (*Seirus aurocapillus*), are common. The common map turtle (*Graptemys geographica*), box turtle (*Terrapene carolina*), black rat snake (*Elaphe obsoleta*), and eastern garter snake (*Thamnophis sirtalis*) are frequently observed in the region. Amphibians include the spring peeper (*Psuedacris crucifer*), wood frog (*Rana sylvatica*), green frog (*Rana clamitans*), and spotted salamander (*Ambystoma*

maculatum). Cave salamanders (*Eurycea lucifuga*) reside near the openings of limestone caves in the southern part of the region. Largemouth bass (*Micropterus salmoides*) and smallmouth bass (*Micropterus dolomieu*), northern pike (*Esox lucius*), channel catfish (*Ictalurus punctatus*), and black crappie (*Pomoxis nigromaculatus*) are popular game fish in the region's many lakes and rivers.

- *Great Plains Steppe and Shrub (Fort Sill).* The Great Plains Steppe and Shrub ecoregion is a transitional zone between grasslands to the west and oak-hickory forests to the east. Typical native vegetation consists of short- and tall-grass plains dissected by riparian forest corridors along perennial creeks. Dominant grass species include blue grama (*Bouteloua gracilis*), buffalo grass (*Buchloe dactyloides*), and little bluestem (*Schizachyrium scoparium*). Mesquite shrubs have invaded many pastures and roadsides. Riparian forests feature elm, persimmon (*Diospyros virginiana*), pecan (*Carya illinoinensis*), and eastern cottonwood (*Populus deltoides*). Post oak (*Quercus stellata*) and blackjack oak (*Quercus marilandica*) form dense stands in the Wichita Mountains. Buffalo (*Bison bison*) that once roamed the region have been reduced to small herds on wildlife refuges and private ranches. Whitetail deer are common, as are raccoon, striped skunk (*Mephitis mephitis*), coyote, and nine-banded armadillo (*Dasypus novemcinctus*). Mourning doves (*Zenaida macroura*) and bobwhite quail (*Colinus virginianus*) are year-round residents. Red-tailed hawks (*Buteo jamaicensis*) and other birds of prey are frequently observed feeding in pastures and agricultural fields. Reptiles include the western diamondback rattlesnake (*Crotalus atrox*), gopher snake (*Pituophis catenifer*), ornate box turtle (*Terrapene ornata*), and prairie lizard (*Sceloporus undulatus*). The bullfrog (*Rana catesbiana*) and the plains spadefoot toad (*Scaphiopus bombifrons*) are two amphibians known from the region. Fish species include largemouth bass, channel catfish, and Red River pupfish (*Cyprinodon rubrofluviatilis*).

- *Great Plains–Palouse Dry Steppe (Fort Carson, Pinon Canyon).* The Great Plains grasslands have scattered trees and shrubs, such as sagebrush (*Artemesia* spp.) and rabbitbrush (*Chrysothamnus* spp.), and form gradient levels of cover, from semidesert to woodland. Stands of cottonwood and willow (*Salix* spp.) are found adjacent to rivers. Vegetation is sparse in areas with rocky eroded soils, sometimes called badlands or breaks. There are numerous species of grasses and herbs. Common species include buffalo grass, locoweed (*Oxytropis* spp.), grama grass, wheatgrass (*Agropyron* spp.), and needlegrass (*Stipa* spp.). Typical wildflowers include the blazing star (*Mentzelia* spp.) and white prickly poppy (*Argemone polyanthemos*); tumbleweed (*Salsola iberica*) is abundant in certain areas (Bailey, 1995). The pronghorn antelope is the most abundant large mammal; the mule deer and white-tailed deer are common in brushy areas along streams (Bailey, 1995). The whitetail jackrabbit (*Lepus townsendii*) is in the northern portion of the ecoregion and the blacktail jackrabbit in the southern portion. The desert cottontail is widespread. Other small mammals, such as prairie dogs (*Cynomys* spp.) and other small rodents, are prey for coyotes, badgers (*Taxidea taxus*), and birds of prey. There are many gallinaceous bird species, including the sage grouse (*Centrocercus urophasianus*), the greater prairie

chicken (*Tympanuchus cupido*), and the sharp-tailed grouse (*Tympanuchus phasianellus*). Other bird species include the horned lark (*Eremophilla alpestris*), lark bunting (*Calamospiza melanocorys*), western meadowlark (*Sturnella neglecta*), mountain plover (*Charadrius montanus*), and black-billed magpie (*Pica pica*). Gopher snake, prairie rattlesnake (*Crotalus viridis*), and painted turtle (*Chrysemys picta*) can be encountered in the region. Flathead chub (*Platygobio gracilis*), black bullhead (*Ameiurus melas*), and cutthroat trout (*Oncorhynchus clarkii*) are found in rivers and streams.

- *Hawaiian Islands (Schofield Barracks, Pohakuloa Training Area).* The Hawaiian Islands' volcanic origin and isolation from mainland areas is responsible for many unique and endemic plant species. The diversity of habitats found on Army lands in Hawaii is reflected in the diversity of native species and numbers of federally listed species found on these lands. Currently 40 percent of the federally listed endangered species are found in Hawaii. Many native plants are listed as threatened or endangered because of their restricted range. At all Army installations in Hawaii there are numerous endangered plant species. Approximately 90 threatened and endangered species are found on Army training lands. On Oahu, vegetation varies with both altitude and position with respect to prevailing northeasterly trade winds. At low elevation on the lee sides of mountains, shrubland is the dominant cover type. Wetter windward sites and higher-elevation sites support tropical forests. Notable tree species include ohia (*Syzygium malaccense*) and koa (*Acacia koa*) trees. Ferns, mosses, and lichens are also abundant. exist at high altitudes above the treeline. The only bog on Army lands in Hawaii is in the Kawailoa Training Area, on the island of Oahu. The Pohakuloa Training Area on the Island of Hawaii is located on the plateau between two large volcanoes at 6,000 ft above sea level. The vegetation at the Pohakuloa Training Area can be characterized as subalpine dryland scrub vegetation. Isolation is also responsible for a limited but unique native flora and fauna. Many of the native land birds are listed as threatened or endangered. There is an endangered Hawaiian flycatcher located at Makua and Schofield Barracks Military Reservation. The endangered Hawaiian hoary bat is known from a few installations on the islands of Hawaii and Oahu. Introduced mammals thrive in the Hawaiian Islands. Feral pigs, goats, and sheep can be found in natural areas. Introduced species threaten native ecosystems by competing with native species for resources. Introduced mammals thrive in the Hawaiian Islands and threaten native species through grazing and trampling. Many bird species have also been introduced. Reptiles are not abundant, and there are no native Hawaiian reptiles. Native and introduced snails are known from the islands. Several native tree snails (*Achatinella* spp.) occur on the island of Oahu. The endangered Oahu tree snail occurs at several Army installations on the island of Oahu.

- *Intermountain Semi-desert (Orchard Training Area, Yakima Training Center).* Sagebrush steppe, composed of sagebrush or shadscale *(Atriplex confertifolia*) mixed with short-grasses, is the dominant vegetation. Moist alkaline flats support greasewood (*Sarcobatus vermiculatus*). Along streams in and near the mountains,

valleys contain willows and sedges (Bailey, 1995). Pronghorn antelope are known from the Intermountain region. In the winter, elk (*Cervus canadensis*) and mule deer move down from mountains into semidesert habitats to escape severe cold. Predators include coyote, mountain lion (*Felis concolor*), and bobcat. Local small mammal fauna features whitetail prairie dog (*Cynomys gunnisoni*), deer mouse (*Peromyscus maniculatus*), jackrabbit, and porcupine (*Erethizon dorsatum*). Numerous waterfowl inhabit the ecoregion to breed and rest there during migration. Mallards (*Anas platyrhynchos*), pintail (*Anas acuta*), green-winged teal (*Anas crecca*), gadwalls (*Anas strepera*), and Canada geese (*Branta canadensis*) are some representative waterfowl species. Sage grouse is an abundant game bird. There are many species of hawks and owls, as well. Sagebrush lizard (*Sceloporus graciosus*) and horned lizards (*Phrynosoma* spp.) are present, in addition to the prairie rattlesnake. Rainbow trout (*Oncorhynchus mykiss*) and other salmonid fishes are well known from the region.

- *Outer Coastal Plain Mixed Forest (Forts Bragg, Polk, and Stewart; Camps Blanding and Shelby).* Temperate evergreen forest is abundant in the Outer Coastal Plain. Common species are deciduous and evergreen oaks, laurels, and magnolias. Well-developed lower strata may consist of tree ferns, small palms, ericaceous shrubs, and herbs. Epiphytes (nonparasitic plants that grow on other plants) are common; Spanish moss (*Tillandsia usneoides*) is one well-known epiphyte. Atlantic coast forested wetlands are dominated by gum (*Nyssa* spp.), red bay (*Persea borbonia*), and cypress (*Taxodium* spp.), while upland areas often support upland pine savannas of longleaf pine (*Pinus palustris*), loblolly pine (*Pinus taeda*), slash pine (*Pinus elliotii*), or pond pine (*Pinus serotina*) with diverse grass, sedge, and forb understories. Poorly drained pocosins (shrub-dominated wetlands) occur in shallow depressions in the Atlantic coastal region. Open pine savannas are maintained by wildfire; in the absence of fire, oak and other hardwood tree species become dominant. The Outer Coastal Plain is a region rich in wildlife species. Whitetail deer and feral pigs (*Sus scrofa*) are important herbivores. Some remote areas support black bears, and some locations in Florida shelter the almost extirpated (extinct) Florida panther (*Felis concolor coryi*). Typical small mammals are raccoons, opossums (*Didelphis virginiana*), flying squirrels (*Glaucomys volans*), eastern cottontail (*Sylvilagus floridanus*), bats (*Myotis* spp.), and many species of ground-dwelling rodents. Bobwhite quail and wild turkey are common ground-nesting game birds. Neotropical migrant birds are numerous, as are wintering migratory waterfowl. The American alligator (*Alligator mississippiensis*) is the largest reptile of the region (Bailey, 1995). Water moccasin (*Agkistrodon piscivorus*) and snapping turtle (*Chelydra serpentina*) are other well-known reptiles. Amphibians are well represented in the region by many rare and common frog, toad, and salamander species. A broad spectrum of fish species are also known from the coastal plain. Many of these species are common in other parts of North America, while others are restricted to the warm waters of southern rivers and lakes.

- *Pacific Lowland Mixed Forest (Fort Lewis).* Coniferous forest is the dominant indigenous vegetation type. Common trees include the western red cedar (*Thuja*

plicata), western hemlock (*Tsuga heterophylla*), and Douglas fir (*Pseudotsuga menziesii*). Coniferous forest is less dense in interior valleys than along the coast. Interior valley forests often contain deciduous trees, such as big-leaf maple (*Acer macrophyllum*), Oregon ash (*Fraxinus latifolia*), and black cottonwood (*Populus trichocarpa*). Prairie-type vegetative communities support open stands of Oregon white oak (*Quercus garryana*) or scattered groves of Douglas fir and other trees such as Pacific madrone (*Arbutus menziesii*). Fescue and other grass species are also abundant in prairie-type communities. Poorly drained sites feature forested wetlands, freshwater marshes, and shrub bogs. Mule deer are the most common large herbivore in the ecoregion. Mountain lion and bobcat are also found in the region. Small mammals include the bushytail wood rat (*Neotoma cinerea*), brush rabbit (*Sylvilagus bachmani*), and gray fox (*Urocyon cinereoargenteus*). Ruffed grouse (*Bonasa umbellus*), mountain quail (*Oreortyx pictus*), and acorn woodpeckers (*Melanerpes formicivorus*) are attracted to oak forests. Waterfowl, as well as eagles and hawks, are regionally abundant. Reptiles are not abundant in the region. Salamanders, frogs, and toads thrive in moist lowland habitats. Salmon (*Oncorhynchus* spp.) and whitefish (*Prosopium* spp.) are known from streams and rivers.

- *Prairie Parkland, Temperate (Fort Riley).* Vegetation in this region consists of prairie intermixed with groves and strips of deciduous trees. Local soil conditions and slope exposure help determine whether forests or grasslands will be dominant. Trees are most likely to occur near streams or on north-facing slopes. Limestone hills having only thin soils support few trees; in the eastern portion, however, trees can be found on most of the highest hills. Tall grasses dominate prairie communities, and the most common species are big bluestem (*Andropogon gerardii*), little bluestem, switchgrass (*Panicum virgatum*), and Indian grass (*Sorgastrum nutans*). Wildflowers and legumes are also abundant in grasslands. Before European settlement, fire and grazing maintained grasslands in areas that are also suitable for trees and shrubs. Where fire and grazing are controlled, deciduous trees can colonize grasslands. Upland forest areas are dominated by oak and hickory species. Floodplains and riparian areas support forested corridors of eastern cottonwood, black willow (*Salix nigra*), and American elm (*Elmus americana*). Much of this region has been converted to agriculture because of the favorable climate and soils. Many species of both prairie and forest animals are found in this ecoregion. White-tailed deer and elk use both forest and grassland habitats in the region. Small mammals include eastern mole (*Scalopus aquaticus*), deer mouse, prairie vole (*Microtus ochrogaster*), and raccoon. Thirteen-lined ground squirrel (*Citellus tridecemlineatus*) and blacktail prairie dog (*Cynomys ludovicianus*) are common on the prairies. Coyotes and badgers are common predators. Belted kingfisher (*Megaceryle alcyon*), bank swallow (*Riparia riparia*), spotted sandpiper (*Actitis macularia*), and green-backed heron (*Butorides virescens*) occur in the riverine forests. In open upland areas, the brown-headed cowbird (*Molothrus ater*), eastern meadowlark (*Sturnella magna*), mourning dove, and red-tailed hawk are common. Reptiles include the red-sided garter snake (*Thamnophis sirtalis*), gopher snake, ornate box turtle, and prairie lizard. Large rivers support many of the fish species typical of the Missouri River

drainage. Fish habitat is limited in the western portion of the ecoregion because many smaller streams are intermittent.

- *Southeastern Mixed Forest (Fort Benning).* Temperate forests in this region are stocked with broadleaf deciduous and needleleaf evergreen trees. Southeastern mixed forest, also known as the Piedmont region, has undergone extensive land conversion to agriculture and pine plantation. Loblolly pine, shortleaf pine (*Pinus echinata*), Virginia pine (*Pinus virginiana*), and other southern yellow pines are important timber trees in young forests. Oaks, hickories, black gum (*Nyssa sylvatica*), and sweetgums are commonly associated with pines and eventually gain dominance as pines mature and die. Red maple (*Acer rubrum*) is very common in wet areas. Dominant grasses include panic grasses (*Panicum* spp.) and other native and introduced species. Common understory species are dogwoods, viburnums (*Viburnum* spp.), blueberries (*Vaccinium* spp.), and hollies (*Ilex* spp.), often occurring with woody vines, including poison ivy (*Toxicodendron radicans*), Virginia creeper (*Parthenocissus quinquefolia*), and wild grape (*Vitis* spp.). White-tailed deer, cottontail rabbits, and fox squirrel are common in uplands where deciduous trees are present. Gray squirrels are found in lowland drainages. Raccoon, opossum, and red fox can be found throughout the region (Bailey, 1995). The eastern wild turkey, bobwhite, and mourning dove are common year-round residents. In mature forests, resident and neotropical migrant songbirds such as the pine warbler (*Dendroica pinus*), cardinal (*Cardinalis cardinalis*), summer tanager, Carolina wren (*Thryothorus ludovicianus*), ruby-throated hummingbird (*Archilochus colubris*), blue jays, and tufted titmouse (*Baeolophus bicolor*) are present. Snakes, turtles, and lizards are common in this warm, temperate climate. Amphibians are also well represented. Catfish (*Ictalurus* spp., *Ameiurus* spp.), madtoms (*Noturus* spp.), shiners (*Lythrurus* spp.), sunfish (*Lepomis* spp.), and black bass (*Micropterus* spp.) are present in the many rivers and reservoirs in the region. A diverse complement of freshwater mussels is known from Gulf Coast drainages.

- *Southwest Plateau and Plains Dry Steppe and Shrub (Fort Hood).* Arid grasslands are the dominant vegetation type. Grasslands are often mixed with shrubs or low trees. Xerophytic grasses, such as blue grama and buffalo grass, are often the most prevalent. On steep, rocky slopes, evergreen live oaks (*Quercus* spp.) and ash juniper (*Juniperus ashei*) are frequently mixed with mesquite shrubs and grasses. Bald cypress (*Taxodium distichum*), eastern cottonwood, and willows are found near perennial streams. Prickly pear cactus, yucca, and other xerophytic plants often invade overgrazed or poor sites. The Mexican ground squirrel (*Citellus mexicanus*) and coyote occur here, as well as the white-tailed deer and nine-banded armadillo. Limestone caves in central Texas are home to large populations of Mexican freetail bats *(Tadarida brasiliensis*). Common ground-nesting birds include wild turkey and bobwhite. Hawks and falcons are frequently observed in open fields. Regionally abundant songbirds include the scissor-tailed flycatcher (*Tyrannus forficatus*), great-tailed grackle (*Quiscalus mexicanus*), and mockingbird (*Mimus polyglottos*). Snakes and lizards are

common. Guadalupe bass (*Micropterus treculi*) is a notable sportfish endemic to the region.

Threatened and Endangered Species. Congress passed the ESA in 1973 to address concerns about the decline in populations of many unique wildlife species. Supporters of the ESA argued that America's natural heritage was of aesthetic, ecological, educational, recreational, and scientific value to the Nation and therefore worthy of protection. The purpose of the ESA is to rebuild populations of protected species and conserve the ecosystems on which endangered and threatened species depend. The law offers two classes of protection for rare species in decline: endangered or threatened. Endangered means a species is in danger of extinction throughout all or a significant portion of its range. Threatened status indicates a species is likely to become endangered within the foreseeable future. All species of plants and animals, except pest insects, are eligible for listing as endangered or threatened. More than 1,200 species are listed as either threatened or endangered. All federal agencies are required to protect threatened and endangered species (TES) while carrying out projects and to preserve TES habitats on federal land. Ideally, with sufficient protection under the ESA, the TES populations will recover to the point at which they no longer need protection under the act.

Under the ESA, it is illegal to "take" TES. As defined in the ESA, "the term take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct." The Secretary of the Interior, through regulations, defined the term *harm* in this passage as "an act which actually kills or injures wildlife." Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Because most TES are not significantly hunted or collected, habitat degradation is the primary reason for population declines in listed species.

The ESA contains provisions for designation of "critical habitat" for listed species when deemed essential for the conservation and recovery of a species. Critical habitat includes geographic areas on which the physical or biological features essential to the conservation of the species are found and which might require special management considerations or protection. Areas not occupied by the species at the time of listing but considered essential to the conservation of the species may be designated as critical habitat. Critical habitat designations are limited to federal agency actions or federally funded or permitted activities.

The Army Transformation PEIS (Appendix D) lists 112 protected species found on 23 representative Army and ARNG installations. The species include 57 plants, 7 mammals, 25 birds, 5 reptiles, 1 amphibian, 4 fish, and 13 invertebrates. Two representative installations, Orchard Training Area and Fort Drum, have no reported TES populations. Just over half (61 species) of these species occur on two installations in Hawaii. Critical habitat has been designated on two installations for two birds—at Fort Lewis for the northern spotted owl (*Strix occidentalis caurina*) and at Pohakuloa Training Area for the paula honeycreeper (*Loxioides bailleui*).

Wetlands. *Wetlands* are the transitional area between dry land and aquatic habitat. As defined by the USACE, wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Three diagnostic characteristics are usually employed to recognize wetlands: hydrology, soils, and vegetation.

- *Hydrology.* Wetlands are inundated with less than 6.6 feet of water on average; otherwise, they are considered deepwater habitat. However, unless wetlands are saturated to the soil surface at least some time during the growing season (evidence of ongoing wetland conditions), they are considered upland or non-wetland habitat.

- *Soils.* Long-term inundation leads to oxygen depletion in soils. The lack of oxygen in wetland soils during part or all of the year causes wetland soils to develop differently than upland soils and to exhibit characteristics that develop under permanent or periodic soil saturation.

- *Vegetation.* Wetlands feature plant species that are adapted to thrive in wet soils with little or no oxygen. Wetland plants have specialized structural or reproductive features that allow them to compete with other plants and persist in inundated soils. Therefore, wetlands are dominated by species that are tolerant of prolonged inundation or soil saturation.

Wetlands are protected in the United States by the Clean Water Act. Wetland protection involves a "no net loss" policy through compliance with Section 404 of the act. The Clean Water Act protects all navigable waters of the United States. The general definition of *navigable waters* is those waters that are subject to the ebb and flow of the tide and/or are currently used, have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. In addition, the term applies to the jurisdictional limits of waters of the United States for all other waters such as lakes, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation, or destruction of which could affect interstate or foreign commerce.

To meet stewardship and compliance objectives, Army land managers avoid impacts on wetlands whenever possible. Wetlands are present on most representative installations. Installations in coastal areas with abundant rainfall are likely to have proportionately more wetland acreage than installations in mountain or desert settings. However, the overall scarcity of water resources in dry climates increases the importance of existing wetlands to desert wildlife. Wetlands are generally more abundant in association with land occupying major watersheds of streams, rivers, and lakes. In addition, installations might have isolated wetlands associated with soils, hydrology, topography, geography, and unique habitat communities. Examples of isolated wetlands are the prairie pothole region of the Dakotas, the Carolina Bay complexes in the Carolinas, and vernal pools in

the West and Midwest. Isolated wetland hydrology is driven by surface runoff or groundwater recharge.

Army natural resources managers are faced with the challenge of protecting wetlands while at the same time providing realistic conditions for military training. Wetlands are susceptible to many different kinds of impacts because they are the active interface between the terrestrial and aquatic components of a drainage basin (Schneider and Sprecher, 2000). Water, sediment, nutrients, toxic substances, and organic matter from upstream or upslope move into wetlands. In the wetland, these inputs can be changed in energy or biochemical status before they are eventually removed farther downstream. Animals also move in and out of wetlands, using them as sources of food, water, and habitat and transferring energy and chemical components between the terrestrial and aquatic ecosystems. Because of these interrelationships, activities upstream or upslope have profound effects on wetlands and on aquatic sites downstream. Consequently, management activities in wetlands can have substantial impacts on communities downstream or within the radius of movement of organisms that use the wetlands.

To predict effects on wetlands, it is necessary to understand the functions that occur in these aquatic sites. Numerous authors have compiled lists of wetland functions, but no list is recognized as official or exhaustive. The National Wetlands Policy Forum has identified eight natural functions that wetlands may perform in the landscape: (1) nutrient removal and transformation, (2) sediment and toxicant retention, (3) shoreline and bank stabilization, (4) floodflow alteration, (5) groundwater recharge, (6) production export, (7) aquatic diversity and abundance, and (8) wildlife diversity and abundance (Conservation Foundation, 1988).

Integrated Natural Resources Management Plans. The purpose of Integrated Natural Resources Management Plans (INRMPs) is to guide natural resources management programs, while ensuring the sustainability of desired military training area conditions and maintaining ecosystem viability. In addition, INRMPs ensure that natural resources conservation measures and Army activities are consistent with federal stewardship requirements.

Under the Natural Resource Management on Military Lands Act of 1960 (Title 16 of the *United States Code* [U.S.C.], Section 670 and following), commonly known as the Sikes Act, as amended according to the Sikes Act Improvement Act of 1997,

> The Secretary of Defense shall carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate the program, the Secretary of each military department shall prepare and implement an integrated natural resources management plan for each military installation in the United States under the jurisdiction of the Secretary.

Under 16 U.S.C. § 670a(b) of the Sikes Act Improvement Act of 1997, to the extent appropriate and applicable, an INRMP must be consistent with the use of military

installations to ensure the preparedness of the Armed Forces. Each INRMP prepared under subsection (a) of this section must provide for the following:

- Fish and wildlife management, land management, forest management, and fish- and wildlife-oriented recreation
- Fish and wildlife habitat enhancement or modification
- Wetland protection, enhancement, and restoration, where necessary for support of fish, wildlife, or plants
- Integration of and consistency among the various activities conducted under the plan
- Establishment of specific natural resource management goals and objectives and time frames for proposed action
- Sustainable use by the public of natural resources to the extent that the use is not inconsistent with the needs of fish and wildlife resources
- Public access to the military installation that is necessary or appropriate for the use described above, subject to requirements necessary to ensure safety and military security
- Enforcement of applicable natural resource laws (including regulations)
- No net loss in the capability of military installation lands to support the military mission of the installation
- Such other activities as the Secretary of the military department determines appropriate

The general conservation management policy of the Department of Defense (DoD) as described in DoD Instruction (DoDI) 4715.3 (May 3, 1996), *Environmental Conservation Program*, stipulates that all DoD conservation programs must work to guarantee continued access to the Nation's land, air, and water resources for realistic military training and testing while ensuring that the natural and cultural resources entrusted to DoD's care are sustained in a healthy condition for scientific research, education, and other compatible uses by future generations.

Guidance for the completion of INRMPs is contained in the Headquarters, Department of the Army (HQDA) INRMP Policy Memorandum (March 21, 1997) entitled *Army Goals and Implementing Guidance for Natural Resources Planning Level Surveys (PLS) and Integrated Natural Resources Management Plan (INRMP).* The memorandum states that the purpose for completing planning-level surveys and the INRMP is "to ensure that natural resource conservation measures and Army activities on mission land are integrated and are consistent with federal stewardship requirements." Installation

INRMPs are to be reviewed annually and revised as necessary. Major revisions are to be completed at least every 5 years. In accordance with the Sikes Act Improvement Act of 1997, INRMPs are prepared in cooperation with federal and state fish and wildlife management agencies, and the public is invited to comment on plans before they are finalized. Table C-11, "Status of Integrated Natural Resources Management Plans," reflects the status of INRMPs at ARNG installations. The ARNG has INRMPs being implemented in 45 states and Puerto Rico. In addition to five-year revisions, annual coordination with the U.S. Fish and Wildlife Service and appropriate state fish and wildlife agency is required.

3.7.2 Environmental Consequences

Proposed action. Long-term minor beneficial effects on biological resources would be expected, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Reduction of the ARNG's inventory of heavy, tracked vehicles would provide a beneficial effect on biological resources at maneuver areas and training ranges used by ARNG forces. As shown in Table 3-1, when compared to wheeled vehicles, the characteristics of the Abrams Main Battle Tank and Bradley Infantry Fighting Vehicle are capable of causing distinguishably greater damage to vegetation. Tracked vehicles also cause greater soil compaction, which reduces the viability of native species because disturbed soil makes it more difficult for vegetation to reestablish itself. Elimination of substantial fraction of the numerous tracked vehicles fielded to ARNG organizations would result in a beneficial reduction of effects on vegetation. These benefits would be more noticeable at training facilities located in dry climates, where shorter growing seasons tend to feature more fragile vegetation than wetter climates and climates with longer growing seasons.

- *Training.* Training would not be expected to affect biological resources. Individual, crew, and squad training, being essentially unchanged, would continue to occur primarily at armories, readiness centers, and maintenance shops where biological resources typically are not at issue. In light of placing all maneuver brigades on a 6-year cycle for achieving a C-1 rating, there would be a very slight increase, overall, in the number of substantial or major collective training events. Training of division-level headquarters elements and Combat Service and Combat Service Support personnel who would be reorganized into UExs and SUAs, respectively, would not materially change; therefore there would be no observable effects on biological resources.

- *Institutional matters.* Institutional matters under the proposed action would not be expected to change, and therefore there would be no new effects on biological resources. The requirement to prepare INRMPs is statutory and unlikely to change in any substantial way in the foreseeable future. As shown in Table C-11, ARNG organizations have exceeded the requirements of the Sikes Act by producing INRMPs for installations not identified in the statute or implementing DoD guidance. Subject to the availability of funding, this practice would be

expected to continue as a stewardship measure recognized and endorsed by the NGB.

No action alternative. No effects on biological resources would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on biological resources.

3.8 CULTURAL RESOURCES

3.8.1 Existing Conditions

Definition of resource. Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activities considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. Cultural resources can be divided into three major categories: prehistoric and historic archaeological resources, historic buildings and structures, and traditional cultural properties. Paleontological resources are also considered under NEPA.

- *Prehistoric and historic archaeological resources*. These resources are locations where human activity measurably altered the earth or left deposits of physical remains (e.g., arrowheads or pottery). Prehistoric resources range from scatters of a few artifacts to village sites and rock art that predate written records in a region. Historic archaeological resources include remains of structures, roads, fences, trails, dumps, battlegrounds, mines, and a variety of other features.

- *Historic properties*. Historic properties can include buildings, sites, structures, objects, and districts. Properties considered significant are usually 50 years old or older. There are exceptions, however, such as properties that meet significance criteria and date to the Cold War era.

- *Historic buildings and structures*. These resources include standing buildings, dams, canals, bridges, and other structures of historic or aesthetic significance. In general, architectural resources must be more than 50 years old to be considered for protection under laws protecting cultural resources. Structures such as military buildings from the Cold War era may be considered significant if they meet certain criteria.

- *Traditional cultural properties*. These resources can include archaeological resources, buildings, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other ethnic groups consider essential for the preservation of their traditional culture.

- *Paleontological resources.* Paleontological resources are scientifically significant fossilized remains, specimens, deposits, and other such data from prehistoric nonhuman life, including remains of plants and animals.

The Secretary of the Interior developed a set of criteria used to identify whether a cultural resource is significant and should be listed on the National Register of Historic Places (NRHP). The criteria for evaluation are expressed at 36 CFR Part 60 as follows:

> The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and: a. that are associated with events that have made a significant contribution to the broad patterns of our history; or b. that are associated with the lives or persons significant in our past; or c. that embody the distinctive characteristics or a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or d. that have yielded, or may be likely to yield, information important in prehistory or history.

Incorporation. This PEA incorporates by reference the discussion of cultural resources contained in the Army Transformation PEIS. Specific information is provided below.

Management authorities and requirements. AR 200-4, *Cultural Resources Management*, and an associated pamphlet, Department of the Army Pamphlet (DA PAM) 200-4, specify Army policy for cultural resources management. The following discussion provides an overview of federal statutes and regulations that are applicable to the management of cultural resources at Army facilities and any and all real property of other federal, state, and local agencies and private parties used by the Army under license, permit, lease, or other land and/or facility use agreement.

Cultural resources are defined as historic properties in the National Historic Preservation Act (NHPA), as cultural items in the Native American Graves Protection and Repatriation Act (NAGPRA), as archaeological resources in the Archaeological Protection Act (ARPA), as sacred sites (to which access is provided under the American Indian Religious Freedom Act [AIRFA]) in Executive Order 13007, and as collections and associated records in 36 CFR Part 79, *Curation of Federally Owned and Administered Collections*. Requirements set forth in NEPA, NHPA, ARPA, NAGPRA, AIRFA, 36 CFR Part 79, Executive Order 13007, and their implementing regulations define the Army's compliance responsibilities, to which the ARNG fully adheres, for management of cultural resources. Regulations applicable to the Army's management of cultural resources include those promulgated by the Advisory Council on Historic Preservation (ACHP) and the National Park Service (NPS). The key to the successful balance of mission requirements and cultural resources compliance and management responsibilities is early planning and coordination to prevent conflicts between the mission and the resources.

The following statutory and regulatory authorities are pertinent.

- *National Historic Preservation Act of 1966 as amended.* The NHPA establishes the federal government's policy to provide leadership in the preservation of historic properties and to administer federally owned or controlled historic properties in a spirit of stewardship. The Army must administer, manage, and treat historic properties in accordance with the NHPA. The Army must also identify, evaluate, and nominate historic properties for listing in the NRHP consistent with the policies and guidelines of AR 200-4 and DA PAM 200-4.

  Under Section 106 of the NHPA, the Army is responsible for identifying, evaluating, and taking into account the effects of all undertakings on historic properties in accordance with the procedures set forth in 36 CFR Part 800. The ACHP is responsible for providing comments on undertakings that affect historic properties. The state historic preservation officer (SHPO) in each state or territory plays a significant role in the Section 106 compliance process by providing comments on efforts to identify, evaluate, and treat any effects on historic properties. If an undertaking on Army lands might affect properties having historic value to a federally recognized Indian tribe, the tribe must be afforded the opportunity to participate as consulting parties during the consultation process defined in 36 CFR Part 800. Traditional cultural leaders and other Native Americans, Alaska Natives, and Native Hawaiians are considered consulting parties with respect to undertakings that could affect historic properties of significance to these persons. If an undertaking might involve excavation of NAGPRA cultural items, the requirements of NAGPRA and 43 CFR Part 10 must also be met prior to implementation of the undertaking.

- *Antiquities Act of 1906, Archaeological Resources Protection Act of 1979, Archaeological and Historic Preservation Act of 1974.* The Antiquities Act of 1906 and ARPA prohibit the excavation, collection, removal, and disturbance of archaeological resources (as defined by ARPA) and objects of antiquity (as referenced in the Antiquities Act) on federally owned Army property without a permit issued by the USACE District Real Estate Office on the approval of the installation commander. Violation of ARPA can result in the assessment of civil or criminal penalties and forfeiture of vehicles and equipment that were used in connection with the violation. The AHPA specifically provides for the survey and recovery of scientifically significant data that might be irreparably lost as a result of any alteration of the terrain by any federal construction project, or federally licensed project, activity, or program. Thus, known paleontological resources must also be addressed in any NEPA documentation prepared for actions that might affect or cause irreparable loss or destruction of such resources. Archaeological resources, objects of antiquity, and significant scientific data from federal installations belong to the installation, except where NAGPRA requires repatriation to a lineal descendant, Indian tribe, or Native Hawaiian organization. Archaeological resources, objects of antiquity, and significant scientific data from nonfederal land belong to the state, territory, or landowner. Such resources from lands used by the Army but for which fee title is held by another agency are the

property of the agency designated as the land manager in the land use instrument (e.g., Public Land Order, Special Use Permit). ARNG land managers ensure that land use instruments allowing for military use are reviewed to determine proper roles and responsibilities.

- *Native American Graves Protection and Repatriation Act of 1990.* The intent of NAGPRA is to identify proper ownership and to ensure the rightful disposition of cultural items in federal possession or control. NAGPRA mandates that the Army summarize, inventory, and repatriate cultural items in its possession or control to lineal descendants or to culturally affiliated federally recognized Indian tribes, Alaska Natives, or Native Hawaiian organizations. NAGPRA also requires that certain procedures be followed when there is an intentional excavation of or inadvertent discovery of cultural items. Installation commanders must ensure that intentional excavation and response to any inadvertent discovery of NAGPRA cultural items are carried out in compliance with all applicable statutory and regulatory requirements of NAGPRA, ARPA, and NHPA. Each statute mandates compliance with independent requirements. Compliance with one statutory requirement, therefore, might not satisfy other applicable requirements.

- *American Indian Religious Freedom Act of 1978 and Executive Order 13007, Indian Sacred Sites.* Under AIRFA and EO 13007, the Army must develop and implement procedures to protect and preserve the American Indian, Eskimo, Aleut, and Native Hawaiian right of freedom to believe, express, and exercise these peoples' traditional religions, including access to sacred sites, use and possession of sacred objects, and freedom to worship through ceremonials and traditional rites. Installation commanders are also required to establish procedures to facilitate consultation with federally recognized Indian tribes and Native Hawaiian organizations, as appropriate. Installation commanders must consult with Indian tribes and Native Hawaiians to identify sacred sites that are necessary to the exercise of traditional religions and must provide access to Army installations for Indian tribe, Alaska Native, and Native Hawaiian practice of traditional religions, rites, and ceremonies. The Army may impose reasonable terms, conditions, and restrictions on access to such sites when the commander deems it necessary to protect personal health and safety, to avoid interference with the military mission, or for other reasons of national security. The installation commander must maintain the confidentiality of sacred site locations.

- *Curation of Federally Owned and Administered Archaeological Collections.* The Army must ensure that all archaeological collections are processed, maintained, and curated in accordance with the requirements of 36 CFR Part 79. However, NAGPRA cultural items and human remains in the Army's possession and control must be disposed of in a manner consistent with the requirements of NAGPRA and 43 CFR Part 10. Army archaeological collections may be processed, maintained, and curated on and by the Army or another federal agency, state agency, or other outside institution or nongovernmental organization, in cooperative repositories maintained by or on behalf of multiple agencies, or in other facilities, under contract, cooperative agreement, or other formal funding

and administrative arrangement provided the standards of 36 CFR Part 79 are met.

Period resources. Prehistoric occupation in the United States is divided generally into major periods depending on region. The time frames of the most recent periods vary significantly, with each region defining different periods and dates. Table C-12, "Regional Locations of Representative Installations," identifies the regional locations of representative installations at which ARNG forces are located or conduct training. Archaeological remains or sites from the various periods might be found on the installations, depending on topography (e.g., degree of slope, distance from fresh water) and amount of soil disturbance due to natural actions such as erosion or man-made events like construction, agriculture, or military activities.

Native American resources include traditional cultural properties; human remains and sacred objects that may be subject to NAGPRA regulations; sacred sites, including geographical locations such as hills, rivers, or unidentified natural landscapes that might exist within the Army installations; archaeological sites; buried cemeteries or other discrete human burials; plants or animals that are collected for religious or traditional ceremonies or activities; and any currently held archaeological holdings or collections that might include sacred objects or human remains. These resources could be present at the installations listed on Table 3-12.

Management activities. ARNG land and resources managers routinely undertake surveys to identify NRHP-eligible archaeological sites and standing structures, traditional cultural properties, or paleontological resources. They also consult with the ACHP and the SHPOs to negotiate programmatic agreements and memoranda of agreement concerning procedure for surveys, actions to be taken in the event of inadvertent discoveries, maintenance of cultural resources, and mitigation measures for adverse effects. ARNG personnel also consult with Native American, Alaska Native, or Hawaiian groups and tribes when their interests might be affected by ARNG activities.

Specific policies, procedures, and responsibilities of the ARNG in meeting cultural resources compliance and management requirements are contained in AR 200-4 (*Cultural Resources Management*) and in DA PAM 200-4 (*Cultural Resources Management*). In addition, the NGB has issued its *Cultural Resources Management Policy Guidance* (All State Log Number P02-0058, November 8, 2002). This resource provides complete guidance for dealing with issues related to Native Americans interests, implementing the requirements of two principal authorities:

- *Presidential Memorandum for Heads of Executive Departments and Agencies on Government-to-Government Relations with Native American Tribal Governments (April 29, 1994).* This memorandum requires that consultation between the ARNG and federally recognized Indian tribes occur on a government-to-government basis. ARNG personnel treat designated representatives of federally recognized Indian tribal governments as representatives of a sovereign government. Consultation with federally recognized Indian tribes on a government-to-government basis occurs formally and directly between

installation commanders and heads of federally recognized tribal governments. Installation and tribal staff-to-staff communications do not constitute formal government-to-government consultation but are normally necessary prerequisites to formal consultation.

- EO 13175 (*Consultation and Coordination with Indian Tribal Governments)* was issued November 6, 2002, and became effective January 5, 2001, replacing EO 13084. Guidance on implementation of the EO is provided in the *Department of Defense Annotated American Indian and Alaska Native Policy*, issued October 27, 1999, which establishes principles for DoD's interacting and working with federally recognized American Indian and Alaska Native governments. The EO establishes a policy that federal agencies will respect Indian tribal self-government and sovereignty, honor tribal treaty and other rights, and strive to meet the responsibilities that arise from the unique legal relationship between the federal government and Indian tribal governments. To this end, federal agencies are to consult with tribal officials as to the need for federal standards and any alternatives that would limit the scope of federal standards or otherwise preserve the prerogatives and authority of Indian tribes. The EO specifically cites the Presidential Memorandum of April 29, 1994, which further obligates federal agencies to "assess the impact of Federal Government plans, projects, programs, and activities on tribal trust resources and assure that tribal government rights and concerns are considered during the development of such plans, projects, programs, and activities."

Other relevant authorities bearing on ARNG activities with respect to cultural resources include the following:

- Department of Defense Instruction 4715.3 (*Environmental Conservation Program*). This instruction implements policy, assigns responsibility, and prescribes procedures for the integrated management of natural and cultural resources on property under DoD control.

- Executive Order 13287 (*Preserve America*). This E.O. directs the federal government to provide leadership in preserving America's heritage by actively advancing the protection, enhancement, and contemporary use of the historic properties owned by the federal government; promoting intergovernmental cooperation and partnerships for the preservation and use of historic properties; inventorying resources; and promoting eco-tourism.

- Executive Order 13007 (*Indian Sacred Sites*). This EO guides each executive branch agency on accommodating access to and ceremonial use of American Indian sacred sites by American Indian religious practitioners, and avoiding adversely affecting the physical integrity of such sacred sites.

An Integrated Cultural Resources Management Plan (ICRMP) is a 5-year plan for implementing an installation's cultural resources activities. The ICRMP supports all ARNG missions, including training, while ensuring good stewardship of sensitive

cultural resources such as historic structures, archaeological sites, and properties of concern to Native Americans, Alaska Natives, and Native Hawaiians. For purposes of managing cultural resources, all resources within a state are considered to be part of a single installation; thus, one ICRMP is prepared for each state and territory. Table C-13, "Status of Integrated Cultural Resources Plans," identifies the status of ICRMPs, indicating that all states have an ICRMP in place or in the process of being prepared. The ARNG has ICRMPs being implemented in 48 states, Puerto Rico, and the Virgin Islands (Appendix C).

3.8.2 Environmental Consequences

Proposed action. No effects on cultural resources would be expected to occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Modularization of forces would not involve introduction or use of new types of weapons systems or equipment for use at existing ranges and maneuver areas. Sensitive areas would continue to be marked for avoidance or placed off-limits, thereby ensuring the protection of cultural resources from damages by weapons or vehicles.

- *Training.* Training exercises involving increased numbers of dismounted soldiers and slightly more events for collective training would not be expected to affect cultural resources. Procedures in place as a result of ICRMPs address appropriate response actions to be taken in the event of inadvertent discovery of cultural resources.

- *Institutional matters.* Programs for the management of real property resources would not be expected to change. In particular, the ICRMP program would continue to provide management procedures and actions to ensure the preservation of cultural resources.

No action alternative. No effects on cultural resources would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on cultural resources.

3.9 HAZARDOUS MATERIALS AND HAZARDOUS WASTES

3.9.1 Existing Environment

Definition of resource. *Hazardous material* is defined as any substance with the physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness or that might pose a substantial threat to human health or the environment. *Hazardous*

waste is defined as any solid, liquid, contained gaseous, or semisolid waste or any combination of wastes that poses a substantial present or potential hazard to human health or the environment.

Evaluation of environmental risks from hazardous materials and wastes focuses on underground storage tanks and aboveground storage tanks and the storage, transport, and use of pesticides and herbicides; fuels; petroleum, oils, and lubricants (POLs), and a variety of chemicals. Risks may also extend to generation, storage, transportation, and disposal of hazardous wastes when such activities occur at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on type of soil, topography, and water resources.

Special hazards are substances that might pose a risk to human health but are not regulated as contaminants under the hazardous waste statutes. Included in this category are asbestos, radon, lead-based paint (LBP), polychlorinated biphenyls (PCBs), and unexploded ordnance (UXO). The presence of special hazards or controls over them might affect or be affected by implementation of a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of the effects of the proposed action.

Incorporation. This PEA incorporates by reference the discussion of hazardous materials and hazardous wastes contained in the Army Transformation PEIS. Specific information is provided below.

Hazardous materials management. The goals of the Army's hazardous materials program are to reduce risk to public health and the environment, prevent pollution, and comply with applicable regulations for hazardous and toxic materials and wastes. Army policy provides that the use of hazardous materials and the generation of hazardous wastes must be avoided, reduced, or eliminated.

Three federal laws primarily influence the Army's hazardous materials and hazardous waste management and have led to numerous regulatory compliance requirements. These are the Resource Conservation and Recovery Act (RCRA), which pertains to solid and hazardous waste; the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), which pertains to spills and abandoned waste sites; and the Toxic Substances Control Act (TSCA), which pertains to use, storage, and disposal of hazardous chemicals.

The Pollution Prevention Act of 1990 (PPA) established a hierarchy of actions or preferences for addressing wastes. Under the act's precepts, pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be the last

resort and should be conducted in an environmentally safe manner. The PPA represents a major departure from most other environmental legislation. It recognizes the fundamental difference between source reduction (avoiding the creation of wastes that are difficult or costly to manage) and waste management and pollution control (having to deal with a regulatory system designed to handle problem waste). The Army's proactive adherence to the precepts of the PPA gives rise to several benefits. These include reduced risk of exposure to potentially harmful contaminants, pollutants, and hazardous substances; reduced disposal costs; reduced liability for noncompliance with regulatory provisions; and reduced risk to health and safety.

ARNG resource managers focus their attention on several discrete hazardous material and hazardous waste areas.

- *Underground storage tanks.* Army policy provides for the removal, repair, or replacement of damaged, leaking, or improperly functioning underground storage tanks (USTs) or associated pollution prevention devices. USTs must include monitoring devices for leak detection and be fitted with cathodic protection, catch basins, and overfill warning devices. The Army developed the TANKMAN system to provide installations with an on-line or real-time management tool that provides data on USTs. The use of TANKMAN software standardizes data reporting requirements by using an Army-wide master database.

- *Pesticides.* The Federal Insecticide, Fungicide, and Rodenticide Act requires the registration of pesticides to ensure that, when used according to label directions, they will not present unreasonable risks to human health or the environment. Other federal regulations governing pesticide use and management include 29 CFR Part 1910, *OSHA Safety and Health Standards*; 40 CFR Chapter 1, Subchapter E, *Pesticide Programs*; 40 CFR Part 165, *Regulations for the Acceptance of Certain Pesticides and Recommended Procedures for the Disposal and Storage of Pesticide Containers*; and 40 CFR Part 171, *Certification of Pesticide Applicators*. Each state has its own regulations governing pesticide use, which are adhered to on Army installations. DoD sets forth pesticide management policy in DoD Directive 4150.7, *Pest Management Program*, and DoD 4160.21-M, *Defense Utilization and Disposal Manual*, Chapter 9, Hazardous Property Management. Army policy is provided in AR 200-1, *Environmental Protection and Enhancement*, and AR 200-5, *Pest Management*. Preventive actions are key to pest management at Army installations. Under Army directives, Preventive Medicine officials conduct a proactive program that includes surveying pest populations and reporting the results to the facilities engineer, conducting an installation pesticide monitoring program, obtaining timely identification of pests and information on the susceptibility of pests to pesticides, establishing health and personnel safety criteria for pesticide operations, and providing pest management certification training. The ARNG is currently revising all of its 54 state- and territory-wide Integrated Pest Management Plans.

- *Lead-based paint.* Federal, state, and local regulations govern both the procedural and substantive aspects of management of LBP, LBP additives, and LBP hazards. Army policy is to manage LBP in place unless it presents an imminent health threat as determined by the installation medical officer or unless operational, economic, or regulatory requirements dictate its removal. Army policy also imposes requirements to reduce the release of lead, lead dust, or LBP into the environment from deteriorating paint surfaces, building maintenance, or other sources on Army installations or on Army-controlled property. Army wastes contaminated with LBP are disposed of properly. Wastes are characterized to determine whether they are classifiable under applicable regulations as hazardous, special, or solid.

- *Asbestos.* During demolition, maintenance, repair, remediation, or renewal of buildings, asbestos can be released into the air. Asbestos is a friable material; that is, crumbling or breaking of asbestos-containing material (ACM) can release asbestos fibers into the air. Asbestos fibers can be released from various building materials, such as pipe and boiler wrap and other insulating materials and acoustic ceiling tiles. National Emissions Standards for Hazardous Air Pollutants, issued under the authority of the Clean Air Act, regulate the demolition and renewal of buildings with ACM. EPA and states have policies that address leaving asbestos in place and thus not disturbing it if its removal would pose a health threat.

- *Polychlorinated biphenyls.* The disposal of PCB compounds is regulated under TSCA, which bans the manufacture and distribution of PCBs with the exception of PCBs used in enclosed systems. By definition, *PCB equipment* is that which contains 500 parts per million (ppm) PCBs or more, *PCB-contaminated equipment* is that which contains PCB concentrations greater than 50 ppm but less than 500 ppm, and *PCB items* are those which contain PCB concentrations of 5 to 49 ppm. EPA regulates the removal and disposal of all sources of PCBs containing 50 ppm or more; the regulations are more stringent for PCB equipment than for PCB-contaminated equipment.

- *Radon.* The effects of exposure to radon are uncertain, primarily because it is difficult to isolate the effects on human beings of exposures to particular sources of radiation. It is now widely accepted that effects of radiation can occur at any dose, no matter how small—a theory called the linear, no-threshold hypothesis. According to this theory, there is no level of exposure below which no effect occurs. If the theory is correct, all exposure to radiation presents some health risk. The risk of lung cancer caused by exposure to radon through its inhalation is a topic of concern. The Army has implemented a Radon Reduction Program to determine and control the levels of radon exposure of military personnel and their dependents, resulting in testing of most facilities as part of this program. Army policy provides for ongoing radon management efforts. In accordance with AR 200-1, the Army maintains and updates records of completed radon assessments and includes radon testing results with real property and housing data to notify tenants and transferees of elevated radon levels. Army policy provides that indoor radon levels are to be measured on newly constructed units and units

converted to housing or continuously occupied structures (such as hospitals) located in high-radon-level areas, Where elevated levels of radon are encountered, Army facilities managers adhere to generally accepted abatement measures.

- *Installation pollution prevention.* To conserve and reduce the consumption of resources, ARNG environmental program managers seek to adopt and implement integrated management approaches, procedures, and operations concerning pollution prevention in all mission areas. Army policy is to conserve water and other natural resources and to minimize or eliminate sources of pollutants to the air, land, and surface water or groundwater due to water usage and solid waste generation and to demonstrate leadership to attain national goals set for controlling water pollutants. ARNG organizations seek to conserve and recover resources and to reuse or recycle materials that otherwise would normally enter the solid or liquid waste stream. ARNG organizations cooperate with federal, state, regional, and local authorities in the formation of management plans for water resources, solid wastes, and wastewater management.

- *Hazardous waste.* The ARNG manages hazardous waste to promote the protection of public health and the environment. Army policy is to substitute nontoxic or nonhazardous materials for toxic or hazardous ones; ensure compliance with local, state, and federal hazardous waste requirements; and ensure the use of waste management practices that comply with all applicable requirements pertaining to generation, treatment, storage, disposal, and transportation of hazardous wastes. The hazardous waste management program reduces the need for corrective action through controlled management of solid and hazardous waste.

- *Solid waste.* ARNG organizations manage the generation, collection, storage, processing, treatment, and disposal of solid wastes in compliance with federal, state, and local environmental laws and regulations through use of an integrated management approach to arrive at the most cost-effective and environmentally safe procedures. ARNG installations minimize the generation and disposal of solid wastes by actively encouraging and participating in source reduction, reuse, recycling, and composting programs. Installations develop and maintain affirmative procurement programs for acquiring recyclable and recycled-content products.

- *Installation restoration.* The Installation Restoration Program seeks to clean up previously contaminated lands on ARNG installations as quickly as funds permit to protect human health and the environment. Army policy provides for protection of the health and safety of installation personnel and the public; protection of the quality of the environment by identifying and addressing the threats posed by uncontrolled hazardous materials; and compliance with federal, state, regional, and local requirements applicable to the cleanup of hazardous materials. The program also includes a comprehensive public affairs program that

solicits public comments on proposed cleanup actions and considers public comments in decisionmaking.

3.9.2 Environmental Consequences

Proposed action. No effects on hazardous materials and hazardous wastes would occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* Modularization of forces would not materially affect activities with respect to hazardous materials and hazardous wastes. Assuming the worst-case scenario—that there would be one wheeled vehicle to replace each tracked vehicle removed from the ARNG inventory—the use of POLs would not be expected to change materially. No increase in the usage of hazardous materials or generation of hazardous wastes would be expected.

- *Training.* The shift in training scenarios involving more numerous dismounted activities would not result in any change to existing levels of hazardous materials used or hazardous wastes generated. Dismounted operations generally rely on minimal vehicle use that might remotely involve generation or release of hazardous materials or wastes.

- *Institutional matters.* Programs for the management of hazardous materials and hazardous wastes would not be expected to change. Vehicle and equipment maintenance shops and storage facilities would continue to operate under existing management programs. No change in the use of hazardous materials or generation of hazardous wastes would be expected with respect to retained vehicles or equipment. Units receiving different types of vehicles would maintain them in accordance with existing policies and in compliance with all relevant federal, state, and local regulations.

The introduction of LBP and ACM is prohibited on military installations. ARNG organizations are typically small-quantity users and generators of hazardous materials and hazardous wastes, and the proposed action would not be expected to result in any increases in hazardous or toxic substances.

No action alternative. No effects on hazardous materials and hazardous wastes would be expected to occur. Implementation of the no action alternative would result in continuation of activities being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects related to hazardous materials and hazardous wastes.

3.10 SOCIOECONOMIC RESOURCES

3.10.1 Existing Environment

Definition of resource. *Socioeconomics* is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are affected by regional birth and death rates and immigration and emigration. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators may be accompanied by changes in other components such as housing availability and the provision of public services. The following are often viewed as major aspects of socioeconomics with respect to military proposals.

- *Demographics*. Demographics identifies the population levels and changes to population levels of a region. Demographic data may also be obtained to identify, as appropriate to evaluation of a proposed action, the nearby population's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

- *Quality of life*. Quality of life data identify both necessities and amenities a population might have at its disposal. Quality of life typically pertains to availability of housing, type of housing (owned or rented), and costs of housing.

- *Environmental justice*. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO states:

  > To the greatest extent practicable and permitted by law, and consistent with the principles set forth in the report on the National Performance Review, each federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations in the United States and its territories and possessions, the District of Columbia, the Commonwealth of Puerto Rico, and the Commonwealth of the Mariana Islands.

  The essential purpose of the EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations near the

sight of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

- *Economic development (construction).* Construction activity on Army installations can generate economic development in a region. Construction involves all types of construction activities, including the creation of buildings (e.g., office buildings, single-family homes, or apartment buildings), training facilities (e.g., multipurpose ranges), and infrastructure (i.e., roads, waste treatment facilities, etc.). The impact of construction activity on the local economy is felt through changes in civilian employment, local business sales volumes, personal income, and population. New construction could be expected to create new jobs, potentially increasing population and local income and spending.

- *Public services.* Public services include law enforcement, fire protection, and medical services. A change in the distribution of forces across Army installations (stationing) or construction of new housing could create changes in population that would affect the demand for public services.

- *Protection of children.* On April 17, 1997, President Clinton issued EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks.* This EO seeks to protect children from disproportionately incurring environmental health or safety risks that might arise as a result of Army policies, programs, activities, and standards. When needed, the Army takes precautions for the safety of children; for example, by the use of fencing, limitations on access to certain areas, and provision of adult supervision.

Incorporation. This PEA incorporates by reference the discussion of socioeconomics contained in the Army Transformation PEIS. Specific information is provided below.

Management of socioeconomics. The assessment of socioeconomic impacts resulting from Army actions can be one of the more controversial issues related to an Army action. The economic and social well-being of a local community can be dependent on the activities of an Army installation. Disruptions to the status quo can become politically charged and emotion-laden. Socioeconomic impacts are most often mitigated through time-phasing of an action. Spreading the action over a few years is often a good mechanism to lessen the suddenness or severity of economic impacts.

Environmental justice and protection of children. The ARNG carefully considers matters related to environmental justice and the protection of children. Minority groups, low-income groups, and children are integrated into the NEPA process through public involvement. Public involvement meets two requirements of EOs 12898 and 13045. First, it aids in identifying minority and low-income groups and actions that might put children at risk. Second, it provides the means for these groups to participate in decisionmaking. Persons or organizations known or thought to have a potential interest in the proposed action are identified, informed, and given the opportunity to participate in

the decisionmaking process through invitation to attend a public scoping meeting and through a coordination letter that invites submission of written comments to the Army. Guidance in addressing environmental justice issues is provided in the Council on Environmental Quality's "Environmental Justice Under the National Environmental Policy Act" (1997) and DoD's "Strategy on Environmental Justice" (1995).

3.10.2 Environmental Consequences

Proposed action. No effects on socioeconomics would be expected to occur upon implementation of the proposed action, as shown in the following analysis of the three relevant activity groups.

- *Weapons systems and equipment.* The proposed action would not result in the introduction of any new weapons systems or equipment at existing ranges and maneuver areas. Demographics, quality of life, environmental justice, economic development related to construction, public services, and protection of children would not be affected by present systems and equipment or the elimination of certain systems (i.e., substantial reduction in the inventory of ARNG tracked vehicles). Fielding of new weapons systems and equipment will be addressed in subsequent NEPA documentation as required.

- *Training.* Training of ARNG forces would continue at existing locations involving essentially the same personnel. A chief aspect of modularization is that personnel would be assigned to units having, essentially, different designations. Training tempo would increase slightly to achieve C-1 ratings, but this increase would not be expected to affect matters such as demographics, quality of life, environmental justice, economic development related to construction, public services, and protection of children in the vicinity of the training sites.

- *Institutional matters.* Programs related to socioeconomics would not be conducted in any different manner with respect to demographics, quality of life, environmental justice, economic development related to construction, public services, and protection of children. Actions taken to ensure the welfare of soldiers, their dependents, and employees supporting military missions would continue to emphasize the importance of personnel to the success of the ARNG mission.

Modularization of forces, occurring virtually everywhere the ARNG is located, would affect all soldiers, civilian employees, and neighboring communities in an equal manner. Impacts related to conversion of ARNG forces would not be disproportionate on any group, and there would be no exclusion of persons, denial of benefits, or discrimination because of their race, color, or national origin. Implementation would also comport with requirements related to the protection of children, whether resident at or in the vicinity of an installation or as a visitor to an installation.

No action alternative. No effects on socioeconomics would be expected to occur. Implementation of the no action alternative would result in continuation of activities

being undertaken by current soldier authorization levels. ARNG organizations would continue to use their present weapons systems and equipment, conduct the same types of training, and engage in similar institutional matters. In these circumstances, there would be neither any increase nor any decrease in effects on socioeconomic conditions.

3.11 CUMULATIVE EFFECTS

The CEQ defines *cumulative effects* as the "impacts on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future action regardless of what agency (federal or nonfederal) or person undertakes such other actions" (40 CFR 1508.7).

Implementation of the proposed action would occur on a national scope over a period of 4 years and, barring unforeseen events, while the Nation wages a global war on terror. The prosecution of the war requires that the NGB continue to make trained and ready units available for deployment. At the macro level, scheduling the conversion of units must comport with the deployment of existing units and ensure that adequate forces are committed to warfighting. On a more local level, the activities inherent in converting units to a modular design would not be expected to have any noticeable cumulative effects. Use of weapons systems and equipment and training activities would change in only minor ways.

3.12 MITIGATION

Mitigation actions are designed and implemented to reduce, avoid, or compensate for adverse effects. Implementation of the proposed action would be expected to result in no adverse effects on environmental resources. To guard against development of circumstances that could in limited cases result in site-specific adverse effects, the NGB and ARNG organizations should maintain their stewardship posture by undertaking the following measures.

- *Real property.* Observe land use plans during training and administrative activities, and maintain compatibility with adjacent land uses.

- *Air quality.* Manage training land rehabilitation activities to minimize conditions that lead to fugitive dust.

- *Noise.* To the extent practicable, conduct training during daylight hours to minimize potential for disturbances to adjacent properties.

- *Water resources.* Adhere to all provisions of NPDES permits, INRMPs, storm water pollution prevention plans, and state sediment and erosion control guidelines in activities that might affect surface waters or groundwater. Reseed and revegetate training areas consistent with land rehabilitation and management program.

- *Geology and soils.* Continue land rehabilitation and management program to minimize potential for erosion of soils.

- *Biological resources.* Maintain up-to-date INRMPs for all appropriate training areas and sites. Adhere to state and local best management practices to minimize runoff and sedimentation to surface waters and wetlands during training activities.

- *Cultural resources.* Adhere to provisions of ICRMPs to ensure continued protection of resources. Keep soldiers informed of requirements to avoid culturally sensitive areas during training; ensure avoidance and protection by establishing buffer areas.

- *Hazardous materials and hazardous wastes.* Optimize the use of environmentally friendly solvents, greases, and materials during all maintenance and training activities. Comply with all provisions of local pollution prevention plans. Encourage recycling of materials so that landfill usage can be minimized.

- *Socioeconomics, environmental justice, and protection of children.* Maintain barriers and post "Keep Out" signs around training areas to discourage children's entry.

This programmatic analysis detects no adverse effects would occur upon implementation of the proposed action and, hence, presents no specific mitigation measures beyond the best management practices listed above. In the absence of adverse effects, no mitigation measures are required to reduce such adverse effects to a level below significant. Follow-on analyses for site-specific proposals, however, may find instances where specific mitigation measures should be committed to and implemented along with such proposals. For instance, in limited cases large-scale unit training exercises might have to be scheduled to avoid potential effects to sensitive species at certain times of the year. There do not appear to be any instances where the proposed action would interfere with on-going mitigation actions already committed to by ARNG organizations with respect to implementation of other proposals, and implementation of the proposed action would not be inconsistent with standard operating procedures for current ARNG actions.

4.0 CONCLUSIONS

This PEA has been prepared to evaluate the potential effects on the natural and human environment from the proposal of the NGB to transform ARNG forces to modular organizations. The PEA has examined the proposed action and a no action alternative. The no action alternative is prescribed by CEQ regulations to serve as the baseline against which the proposed action and alternatives are analyzed.

The PEA has considered potential effects on a wide range of environmental resources and conditions, including real property, air quality, noise, water resources, geology and soils, biological resources, cultural resources, hazardous materials and hazardous wastes, and

socioeconomics (including environmental justice and protection of children). Effects would occur as a result of weapons systems and equipment use, training, and institutional matters. Implementation of the proposed action would have beneficial effects on four resources, as discussed below. Other environmental resources or conditions evaluated in the PEA would not be affected.

- *Effects on the noise environment.* Long-term minor beneficial effects would be expected. Elimination of more than half of the ARNG organizations' tracked vehicles would reduce the number of heavy, noisy vehicles with respect to both engine noise and organic weapons (the Abrams tank operates with a 120-mm smooth-bore cannon, and the Bradley Infantry Fighting Vehicle operates with a 25-mm chain gun and the TOW antitank missile). Plans for types and quantities of vehicles in the infantry brigades have not been finalized; operations involving Humvees and medium trucks would offset some of the noise reductions attributable to elimination of tanks and other tracked vehicles. Additional changes in the quantities of noise-producing weapons system would also occur. Numerous personnel in units currently equipped with various towed artillery and air defense weapons systems would be transferred and retrained for duties in other types of units.

- *Effects on water resources.* Long-term minor beneficial effects would be expected. The reduction of tracked vehicles by more than 50 percent would provide a long-term minor indirect benefit to surface water quality. When operated off-road, tracked vehicles tend to crush vegetation and compact soil, thus affecting the ability of vegetative cover to slow the conveyance of precipitation to surface waters. If there were less harm to vegetation and soils, there would be less sedimentation of surface waters.

- *Effects on geology and soils.* Elimination of more than half of the tanks, Bradley Fighting Vehicles, and armored personnel carriers now fielded to ARNG organizations would result in a beneficial reduction of effects on soils. This outcome would be more pronounced at installations that have soils susceptible to erosion.

- *Effects on biological resources.* Long-term minor beneficial effects would be expected. Elimination of numerous tracked vehicles fielded to ARNG organizations would result in a beneficial reduction of effects on vegetation. These benefits would be more noticeable at training facilities located in dry climates, where shorter growing seasons tend to feature more fragile vegetation than wetter climates and climates with longer growing seasons.

Under the no action alternative, no effects would be expected. No cumulative effects have been identified. In light of there being no adverse effects expected upon implementation of the proposed action, no specific mitigation actions are recommended. To guard against development of circumstances that could in limited cases result in site-specific adverse effects, the NGB and ARNG organizations should maintain their

stewardship posture by implementing best management practices designed to safeguard environmental resources.

Analyses in the PEA show that implementation of the proposed action would not result in significant environmental or socioeconomic effects. Issuance of a Finding of No Significant Impact would be appropriate, and an Environmental Impact Statement need not be prepared prior to implementation of the proposed action.

5.0 LISTING OF PREPARERS AND AGENCIES AND PERSONS CONSULTED

Preparers:

Michelle Cannella, Graduate Studies, Mineral Economics, Pennsylvania State University; B.S., Mineral Economics, Pennsylvania State University; years of experience: 6.

Jeff Dorman, B.S., Biology and Environmental Studies, St. Lawrence University, NY; years of experience: 3.

Jennifer Jarvis, B.S., Environmental Resource Management, Virginia Tech; years of experience: 5.

Thomas Magness, M.S., Geography, University of Wisconsin; B.S., Engineering, United States Military Academy; years of experience: 36.

Martha Martin, B.A., English, Capital University; years of experience: 24.

Michael Moran, Ph.D., Biochemistry, University of Cincinnati; B.S., Chemistry, Montana State University; years of experience: 25.

Kelley Parse, B.S., Environmental Science, Lubbock Christian University; years of experience: 6.

Patrick Solomon, M.S., Geography, University of Tennessee; B.A., Geography, Geneseo State University; years of experience: 7.

Paul A. Wilbur, J.D., Wayne State University Law School; B.A., English, University of Michigan; years of experience: 27.

Agencies and Persons Consulted:

Eric Andersen, Conservation Branch, ARNG Readiness Center, NGB

Lieutenant Colonel Rick Beltran, Force Management Division, ARNG Readiness Center, NGB

Lieutenant Colonel Don Grimm, Force Management Division, ARNG Readiness Center, NGB

Major Christopher Tatian, NEPA Program Manager (Northwest), ARNG Readiness Center, NGB

6.0 REFERENCES

Bailey, R.G. 1995. *Description of the Ecoregions on the United States,* 2nd ed. Misc. pub. no. 1391. USDA Forest Service, Washington, DC.

Committee on Energy and Commerce Democrats, 108th Congress, U.S. House of Representatives. *Training and Testing Range Complex Inventory*. http://www.house.gov/commerce_democrats/ DODexemptions/OSD_Inventory.pdf. Accessed September 1, 2004

Conservation Foundation. 1988. *Protecting America's Wetlands: An Action Agenda*. The Conservation Foundation, Washington, DC.

Department of Defense. No date. *Base Structure Report, Fiscal Year 2003 Baseline*. Office of the Deputy Under Secretary of Defense (Installations & Environment).

Feickert, A. 2004, July 19. *U.S. Army's Modular Redesign: Issues for Congress*. Congressional Research Service.

Headquarters, Department of the Army. 1987, December 1. *Manning Criteria–Army National Guard Major Training Areas*. National Guard Bureau Pamphlet 570-3.

Headquarters, Department of the Army. 1995, April 28. *Training Site General Information Summary*. National Guard Pamphlet 25-1.

Headquarters, Department of the Army. 2001, January 1. *The Army Installation Status Report Program.* Army Regulation 21-014. Washington, DC.

Headquarters, Department of the Army. 2002, October. *Training the Force*. Field Manual 7-0.

Joint Chiefs of Staff. 2001, April 1. *Global Status of Resources and Training System*. Chairman of the Joint Chiefs of Staff Instruction 3401.02.

National Guard Bureau. 2001, February 8. *Integrated Cultural Resources Management Plans and Consultation Guidance*. All States Log I01-0026.

National Guard Bureau. 2004, August 5. *ARNG Army Campaign Plan Forum: Transforming the Army Now*. Briefing charts.

National Guard Bureau. 2004. *Transforming the Army National Guard Now, Modularity Update Briefing: National PORTAC [Plans, Operations Readiness and Training Council] Conference*, August 19–20, 2004. Chief, Force Management Division.

Schneider, E.R., and S.W. Sprecher. 2000. *Wetlands Management Handbook*. ERDC/EL SR-00-16. Wetlands Regulatory Assistance Program, Environmental Laboratory, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

U.S. Department of the Army. 2004, January. *Final Environmental Impact Statement for 2nd Armored Cavalry Regiment Transformation and Installation Mission Support, Joint Readiness Training Center (JRTC) and Fort Polk, Louisiana, and Long-Term Military Training Use of Kisatchie National Forest Lands.* Joint Readiness Training Center and Fort Polk, Louisiana.

U.S. Department of the Army. 2004, May 10. *Army Campaign Plan Change 1*. G-3.

U.S. Department of the Army. 2004. Army Announces Comprehensive Strategy. Army Public Affairs. http://www4.army.mil/ocpa/read.php?story_id_key=6464. Accessed December 16, 2004.

U.S. Department of the Army. 2004, March 26. *Prioritization of Integrated Training Area Management (ITAM) Installations*. Memorandum. G-3 (DAMO-TRS).

Appendix A
Key Terms

Capabilities Ratings. *See,* Global Status of Resources and Training System.

Components. Major elements of the Army based on individuals' service obligations. The Army consists of two principal components: the Active Component and the Reserve Component. Members of the Active Component perform their duties on a full-time basis. Members of the Reserve Component, consisting of the U.S. Army Reserve and the Army National Guard, usually perform their duties on a part-time basis (with a commitment for 2 weeks of training on a full-time basis annually). The Army consists of approximately 510,000 soldiers in the Active Component, 350,000 soldiers in the Army National Guard, 205,000 soldiers in the Army Reserve, and a civilian workforce of approximately 220,000 people.

Echelons of Army Operational Forces. Different sized elements or organizations within the Army that carry out missions. The basic building block of all Army organizations is the individual *soldier*. A small group of soldiers organized to conduct infantry maneuver and fires is called a *squad*. The next larger unit is known as a *platoon*. In ascending order, the next larger echelons are the Army's *companies* (or batteries or troops), *battalions* (or squadrons), *brigades* (or regiments or groups), *divisions*, *corps*, and *Armies*. Brigades consist of battalions and smaller units and usually have 3,000 or more personnel. Brigades vary in size depending on the nature of their primary mission and their equipment. "Heavy" brigades of armored and mechanized forces generally have more personnel than "light" brigades, which consist mainly of dismounted infantry. Divisions have the necessary integral arms and services required for sustained combat. Capable of performing any tactical mission and designed to be largely self-sustaining, divisions are the basic units of maneuver at the tactical level. Divisions, which consist of brigades, battalions, and smaller units, vary in size. A corps is the deployable level of command required to synchronize and sustain combat operations.

General Structure of Army Force

Element	Size (Number of Soldiers)	Leader
Squad, Section	9–10	Non-commissioned officer
Platoon	16–44	Lieutenant
Company/Battery/Troop	62–190	Captain
Battalion/Squadron	300–1,000	Lieutenant Colonel
Brigade/Regiment/Group	3,000–5,000	Colonel
Division	10,000–15,000	Major General
Corps	20,000–45,000	Lieutenant General
Army	50,000+	General

Global Status of Resources and Training System. Pursuant to Chairman of the Joint Chiefs of Staff Instruction 3401.02 (*Global Status of Resources and Training System*), each Combat, Combat Support, and Service-designated Combat Service Support unit, including those of the National Guard and Reserve, reports an overall unit resource and training category level (C-level). The C-level reflects the status of the selected unit resources measured against the resources required to undertake the wartime mission(s) for which the unit is organized or designed. The C-level also reflects the condition of available equipment and unit training status. The five unit C-levels are as follows:

- *C-1.* The unit possesses the required resources and is trained to undertake the full wartime mission(s) for which it is organized or designed. The unit does not require any compensation for deficiencies.

- *C-2.* The unit possesses the required resources and is trained to undertake most of the wartime mission(s) for which it is organized or designed. The unit requires little, if any, compensation for deficiencies.

- *C-3.* The unit possesses the required resources and is trained to undertake many, but not all, portions of the wartime mission(s) for which it is organized or designed. The unit requires significant compensation for deficiencies.

- *C-4.* The unit requires additional resources or training to undertake its wartime mission(s), but it may be directed to undertake portions of its wartime mission(s) with resources on hand.

- *C-5.* The unit is undergoing a Service-directed resource action and is not prepared, at this time, to undertake the wartime mission(s) for which it is organized or designed.

The unit's overall C-level is based only on the resources and training organic (assigned or allocated) to the measured unit or its parent unit. Units measure and report status in four areas: personnel (P-level), equipment and supplies on hand (S-level), equipment condition (R-level), and training (T-level). They assign a numeric value in the range of 1 through 6 for each of the four areas. The unit's overall C-level is identical to the lowest level recorded in any of the unit's individually measured resource areas (personnel, equipment and supplies on hand, equipment condition, or training). If prudent, the unit commander may subjectively raise or lower the unit’s overall C-level.

Institutional Army. That portion of the Army that generates and sustains the capabilities of the deployable operating forces. Functions of Army Headquarters and other elements of the production and sustaining base include recruiting, training, equipping and maintaining, organizing, mobilizing and demobilizing, and administering forces to be provided to the warfighting Commanders-in-Chief of the unified commands.

Mission Essential Task List. A mission is the primary task assigned to an individual, unit, or force. It usually contains the elements of who, what, when, where, and the reasons therefore, but it seldom specifies how. A task is a clearly defined and measurable

activity accomplished by soldiers and units. Tasks are specific activities that contribute to the accomplishment of encompassing missions or other requirements. The METL is a compilation of mission-essential tasks that must be successfully performed if an organization is to accomplish its wartime mission. Commanders must selectively identify and train on those tasks that accomplish the unit's critical wartime mission. The METL serves as the focal point on which commanders plan, execute, and assess training.

Modernization. The development or procurement of new systems with improved warfighting capabilities.

National Military Strategy. The Chairman of the Joint Chiefs of Staff, in consultation with the Joint Chiefs of Staff and the Combatant Commanders, is responsible for the articulation and issuance of the National Military Strategy. The National Military Strategy conveys the advice of the Chairman and the Joint Chiefs of Staff on the strategic direction of the Armed Forces in implementing the guidance in the President's National Security Strategy. The current strategy calls for shaping, responding to, and preparing now to address the challenges and opportunities confronting the Nation. The strategic national military objectives are to defend and protect U.S. interests through promoting peace and stability and, when necessary, defeating adversaries. The four strategic concepts governing the use of forces are strategic agility, overseas presence, power projection, and decisive force.

National Security Strategy. The National Security Strategy, formulated by the President, sets forth national security goals. The current strategy advances the Nation's fundamental and enduring security needs: protection of the lives and safety of Americans; maintenance of the sovereignty of the United States, with its values, institutions, and territories intact; and provision for the prosperity of the Nation and its people. It further establishes as a core objective "to enhance our security with effective diplomacy and with military forces that are ready to fight and win."

Power Projection Platform. Power projection is the ability of a nation to apply all or some of its elements of national power—political, economic, informational, or military—to rapidly and effectively deploy and sustain forces in and from multiple dispersed locations to respond to crises, to contribute to deterrence, and to enhance regional stability. An Army power projection platform is an installation that strategically deploys one or more high-priority Active Component brigades or larger units, mobilizes and deploys high-priority Army Reserve Component units, or both. The 15 installations identified by the Army as power projection platforms are Fort Benning, GA; Fort Bliss, TX; Fort Bragg, NC; Fort Campbell, KY; Fort Carson, CO; Fort Dix, NJ; Fort Drum, NY; Fort Eustis, VA; Fort Hood, TX; Fort McCoy, WI; Fort Lewis, WA; Fort Polk, LA; Fort Riley, KS; Fort Sill, OK; and Fort Stewart, GA.

Power Support Platform. An Active Army or federally activated state-operated installation that strategically deploys individuals from all services, the civilian force, and mobilized reserve components. Power support platforms house training facilities and heavy equipment for Reserve Component combat units. The 12 power support platforms identified by the Army are Aberdeen Proving Ground, MD; Camp Atterbury, IN; Camp

Shelby, MS; Camp Roberts, CA; Fort Buchanan, PR; Fort Huachuca, AZ; Fort Jackson, SC; Fort Knox, KY; Fort Lee, VA; Fort Leonard Wood, MO; Fort Rucker, AL; and Gowen Field, ID.

Recapitalization. The rebuilding and selected upgrading of currently fielded systems to ensure operational readiness and zero time/zero mile systems.

Special Use Airspace. Special use airspace permits activities that either must be confined because of their nature or require limitations on aircraft that are not a part of those activities. Prohibited Areas and Restricted Areas are regulatory special use airspace. Warning Areas, Military Operations Areas, Alert Areas, and Controlled Firing Areas are nonregulatory special use airspace. Establishment of special use airspace is under the cognizance of the Federal Aviation Administration.

Spectrum of Operations. The range of actions the Army might be called on to take to support the objectives of the National Security Strategy and the National Military Strategy. The spectrum of operations is often expressed by its order of ascending intensity. At the lower end of the spectrum are domestic disaster relief, environmental operations, domestic civil support, military-to-military contacts, arms control, humanitarian assistance, security assistance, counterdrug operations, show of force, and peace operations. Progressing toward higher intensities, the spectrum includes noncombatant evacuations, counterterrorism, peace enforcement, raids, strikes, insurgencies, limited conventional conflict, regional conventional war, tactical nuclear war, global conventional war, and strategic nuclear war.

Unit of Action. Streamlined units that are more capable of independent action because of their improved organization and enhanced equipment. UAs are permanently task-organized to the way they will fight. The new brigade-based structure on which UAs are based replaces current arrangements designed for the Cold War when the Army was prepared to fight giant set-piece battles on European soil and when most support roles were organized at the division level. Compared to existing brigade combat teams, UAs have greater capacity for rapid packaging and responsive and sustained employment to support combatant commanders.

Unit of Employment. Highly tailorable, high-level echelons that integrate and synchronize Army forces for full-spectrum operations at the higher tactical and operational levels of war or conflict. Typically division- and corps-like elements, UEs focus on battles, major operations, and decisive land campaigns in support of joint operational and strategic objectives. UEs have the inherent capacity to interact effectively with multinational forces, as well as with interagency, nongovernmental organizations, and private organizations. A UE at the corps level is referred to as a "UEy"; at the division level, as a UEx. UEs represent standardization of the seven types of division headquarters now existing throughout the Army.

Warfighting Forces. Army doctrine recognizes three principal types of warfighting forces. *Combat arms* refers to units and soldiers that close with and destroy enemy forces or provide firepower and destructive capabilities on the battlefield. The branches and

functions included are Air Defense Artillery, Armor/Cavalry, Aviation, Field Artillery, Infantry, Special Forces, and Corps of Engineers. *Combat support* refers to units and soldiers that provide critical combat functions in conjunction with combat arms units and soldiers. The branches and functions included are Chemical Corps, civil affairs, psychological operations, Military Intelligence, Military Police Corps, and Signal Corps. *Combat Service Support* refers to the essential capabilities, functions, activities, and tasks necessary to sustain all elements of operating forces in theater at all levels of war. Combat Service Support ensures the aspects of supply, maintenance, transportation, health services, and other services required by aviation and ground combat troops to permit those units to accomplish their missions in combat. The branches and functions included are Adjutant General Corps, Acquisition Corps, Chaplain Corps, Finance Corps, Judge Advocate General Corps, Medical Corps, Ordnance Corps, Transportation Corps, and Quartermaster Corps.

This page intentionally left blank.

Appendix B

Selected Major Weapons and Equipment Systems

System	Principal Environmental Effects
AH-64 Apache. Attack helicopter. Entered Army service: 1984. Variants in service: AH-64A/D. Specifications (AH-64A): Length overall: 49 ft 5 in. Weight: 17,650 lb. Speed: 232 mph. Range: 380 mi. Crew: 2.	Air emissions, soil disturbance, noise
CH-47 Chinook. Heavy-lift cargo helicopter. Entered Army service: 1962. Variants in service: CH-47C/D, MH-47D/E. Specifications (CH-47D): Length overall: 51 ft. Weight: 53,500 lb. Range: 245 mi. Crew: 3.	Air emissions, soil disturbance, noise
UH-60 Blackhawk. Utility helicopter. Entered Army service: 1979. Variants in service: UH-60 A/L, EH-60C, MH-60K. Specifications (UH-60A): Length overall: 50 ft. Weight: 20,250 lb. Range: 375 mi. Crew: 3.	Air emissions, soil disturbance, noise
BGM-71 TOW. Wire-guided antitank missile. Entered Army service: 1970. Variants in service: TOW 2/2A/2B. Specifications: Length overall: 3 ft 10 in. Weight: 173 lb. Range: 2.5 mi. Crew: 2.	Metals deposition, destruction of vegetation, soil disturbance, potential vegetation ignition, noise
FIM-92A Stinger. Short-range air defense missile. Entered Army service: 1981. Specifications: Length overall: 60 in. Weight: 34.5 lb. Range: 3 mi.	Metals deposition, noise, air emissions
Family of Medium Tactical Vehicles (FMTV). Entered Army service: 1996. Variants in service: M-1078/1079/1081 Light Medium Tactical Vehicle (LMTV), M-1082-1095 Medium Tactical Vehicle (MTV). Specifications (M1078 Cargo Truck): Length: 21 ft. Weight: 16,499 lb. Movement: Wheeled. Range: 400 mi. Crew: 1.	Air emissions, soil disturbance (off-road), vegetation disturbance (off-road)
Javelin. Antitank missile. Entered Army service: 1996. Specifications: Length overall: 3 ft 6 in. Weight: 26.1 lb. Range: 1.4 mi. Crew: 2.	Metals deposition, destruction of vegetation, soil disturbance, potential vegetation ignition, air emissions, noise
M-2 Machine Gun. Heavy machine gun. Entered Army service: 1938. Specifications: Caliber: 50-caliber. Length overall: 61.4 in. Weight: 84 lb. Range: 4.2 mi. Rate of fire: 550 rounds per minute.	Lead deposition to soils, minor air emissions, noise
M-1 Abrams. Main battle tank. Entered Army service: 1980. Variants in service: M1, M1A1, M1A2. Specifications: Length overall: 32 ft 0.5 in. Weight: 120,000 lb. Movement: Tracked. Speed: 45 mph. Main gun: 120-mm. Crew: 4.	Soil compaction, metals deposition, vegetation destruction, air emissions, noise
M2/M3 Bradley. Infantry/cavalry fighting vehicle. Entered Army service: 1981. Variants in service: M2A1/A2 (infantry fighting vehicle), M3A1/A2 (cavalry fighting vehicle). Specifications (M2): Length overall: 21 ft 2 in. Weight: 50,600 lb. Movement: Tracked. Main gun: 25-mm chain gun. Crew: 3.	Soil compaction, metals deposition, vegetation destruction, air emissions, noise
M-4 Carbine. Compact assault rifle. Entered Army service: 1997. Specifications: Caliber: 5.56 mm. Weight: 5.65 lb. Range: 500 m. Rate of fire: Variable depending on rate selected.	Lead deposition, minor air emissions, noise
M9 Armored Combat Earthmover (ACE). Armored earthmover. Entered Army service: 1986. Specifications: Length overall: 20 ft 6 in. Weight: 54,000 lb. Movement: Tracked. Range: 200 mi. Crew: 1.	Soil compaction, air emissions, noise
M-9 Pistol. Semiautomatic pistol. Entered Army service: 1990. Specifications: Caliber: 9 mm. Length overall: 217 mm. Barrel: 125 mm. Weight: 850 g. Range: 50 m.	Lead deposition to soil, minor air emissions, noise
M-16 Rifle. Assault rifle. Entered Army Service: 1964. Variants: M-16A1/A2/A3. Specifications: Caliber: 5.56 mm. Weight: 7.5 lb. Range: 800 m. Rate of fire: variable depending on rate selected.	Lead deposition to soils, minor air emissions, noise

Selected Major Weapons and Equipment Systems (continued)

System	Principal Environmental Effects
M-56 Coyote. Smoke generation system. Entered Army service: 1998. Specifications: Modular system. Production: 90 minutes obscurant generation. Movement: Wheeled. Carrier: M998 (High Mobility Multipurpose Wheeled Vehicle, or "Humvee")	Air emissions, vegetation disturbance (off-road), noise
M-58 Wolf. Smoke generation system. Entered Army service: 1998. Specifications: Modular system. Production: 90 minutes obscurant generation. Movement: Tracked. Carrier: M113 FOV.	Air emissions, vegetation disturbance (off-road), noise
M-88 Hercules (Heavy Equipment Recovery Combat Utility Lift and Evacuation System). Armored recovery vehicle. Entered Army service: 1961. Variants in service: M88A1, M88A2 Hercules. Specifications (M88A2): Length overall: 28 ft 4 in. Weight: 140,000 lb. Movement: Tracked. Range: 280 mi. Crew: 3.	Soil compaction, vegetation destruction, air emissions, noise
M-278 Combat Engineer Vehicle. Armed vehicle for breaching and obstacle removal operations. Entered Army service: 1965. Full-tracked armored vehicle (basic M60A1 tank) with a hydraulically operated debris blade. Crew: 4.	Soil compaction, vegetation destruction, air emissions, noise
M-94 Fox. Armored NBC reconnaissance vehicle. Entered Army service: 1998. Variants in service: XM-93, M-93A1. Specifications (M-93A): Length overall: 18 ft 8 in. Weight: 40,400 lb. Movement: Wheeled. Range: 500 mi. Crew: 3.	Soil disturbance (off-road), air emissions, noise
M-109. Self-propelled howitzer. Entered Army service: 1963 (M109). Variants in service: M109A2/3/5/6. Specifications (M109A6): Length overall: 32 ft 2 in. Weight: 63,300 lb. Movement: Tracked. Main gun: M-284 155 mm howitzer. Crew: 6.	Soil compaction, metals deposition, vegetation destruction, air emissions, noise
M-992 Field Artillery Ammunition Support Vehicle (FAASV). Ammunition carrier for M-109 howitzers. Entered Army service: 1984. M-109 chassis with enclosed superstructure. Movement: Tracked. Weight: 57,100 lb. Crew: 2.	Soil compaction, vegetation destruction, air emissions, noise
M-113 Family of Vehicles. Armored personnel carrier; mortar carrier; command post. Entered Army service: 1960. Variants in service: M113A2, M113A3, M106, M577, M1064A3. Specifications (M113A3): Length overall: 17 ft 5 in. Weight: 27,000 lb. Movement: Tracked. Range: 300 mi. Crew: 2.	Soil compaction, vegetation destruction, air emissions, noise
M-119. Lightweight towed howitzer. Entered Army service: 1989. Specifications: Caliber: 105 mm. Length overall: 16 ft. Weight: 4,100 lb. Carriage: Wheeled. Range: 13 mi.	Metals deposition, soil disturbance, minor air emissions, vegetation destruction, noise
M-249 Squad Automatic Weapon (SAW). Squad automatic weapon. Entered Army service: 1987. Specifications: Caliber: 5.56 mm. Length overall: 100 cm. Weight: 16.3 lb. Range: 800 m. Rate of fire: 750 rounds per minute.	Lead deposition, minor air emissions, noise
M-240 Machine Gun. Medium machine gun. Entered Army service: 1997. Specifications: Caliber: 7.65 mm. Weight: 27.6 lb. Range: 1,100 m. Rate of fire: 200–600 rounds per minutes.	Lead deposition, minor air emissions, noise
M-252 Mortar. Mortar. Entered Army service: 1987. Specifications: Caliber: 81 mm. Barrel length: 4 ft 6 in. Weight: 91 lb. Range: 5,600 m. Rate of fire: 15 rounds per minute (sustained).	Metals deposition, destruction of vegetation, soil disturbance, minor air emissions, noise
M-270 Multiple Launch Rocket System (MLRS). Entered Army service: 1983. Specifications (launcher): Length overall: 22 ft 10 in. Weight: 55,536 lb. Movement: Tracked. Average speed: 30 mph. Max speed: 40 mph. Range: 300 mi. Crew: 3.	Metals deposition to soil, destruction of vegetation, soil compaction, air emissions, noise

Selected Major Weapons and Equipment Systems (continued)

System	Principal Environmental Effects
M977 Heavy Expanded Mobility Tactical Truck (HEMTT). Type: Heavy Expanded Mobility Tactical Truck. Entered Army service: 1983. Variants in service: M977/978/983/984/985. Specifications (basic model): Length overall: 33 ft 4.5 in. Weight: 62,000 lb. Movement: Wheeled. Range: 300 mi. Crew: 2.	Air emissions, noise, soil compaction (off-road), vegetation destruction (off-road)
M-998 High Mobility Multipurpose Wheeled Vehicle (HMMWV, "Humvee"). Entered Army service: 1985. Specifications (basic model): Length overall: 15 ft. Weight: 5,200 lb. Maximum speed: 65 mph. Range: 300 mi.	Soils disturbance (off-road), vegetation disturbance (off-road), air emissions, noise
M-1097 Avenger. Self-propelled anti-aircraft system. Entered Army service: 1989. Specifications: Weapons: 8 Stinger missiles, 1 50-caliber machine gun. Vehicle: M998 HMMWV. Length overall: 16 ft 3 in. Weight: 8,600 lb. Movement: Wheeled. Crew: 2.	Metals deposition, minor air emissions, noise
MIM-104 Patriot. Medium/high altitude air-defense missile. Entered Army service: 1985. Specifications: Length overall: 17 ft 5 in. Weight: 1,534 lb. Vehicles: Multiple (wheeled). Range: 50 mi.	Metals deposition, air emissions, noise
Mk-19-3 Grenade Machine Gun. Belt-fed automatic grenade launcher. Entered Army service: 1983. Specifications: Caliber: 40 mm. Weight: 72.5 lb. Range: 2,300 m. Rate of fire: 60 rounds per minute.	Metals deposition, destruction of vegetation, soil disturbances, minor air emissions, noise
RQ-7A Shadow 200. Tactical unmanned aerial vehicle (TUAV) ground maneuver brigade commander's reconnaissance, surveillance, target acquisition, and battle damage assessment. Entered Army service: 2003. Specifications: Wingspan: 12.3 feet. Length: 11.2 feet. Payload: 50 lb. Weight: 350 lb.	Air emissions, noise

Source: *Army Fact Files*, http://www.army.mil/operations, accessed August 24, 2004.

This page intentionally left blank.

Appendix C
Data Tables

Table C-1
Terrain Settings at Select Army Installations

Installation	Terrain
Fort A.P. Hill, Virginia	Forest, swamp/wetland
Fort Benning, Georgia	Swamp/wetland, forest, open woodland/savanna
Camp Blanding, Florida	Forest, open woodland/savanna
Fort Bliss, Texas	Desert, mountain, semiarid steppe
Fort Bragg, North Carolina	Forest, open woodland/savanna
Fort Campbell, Kentucky	Forest, open woodland/savanna
Fort Carson, Colorado	Open woodland/savanna, grassland/prairie, semiarid steppe
Fort Chaffee, Arkansas	Forest, swamp/wetland
Fort Dix, New Jersey	Forest, swamp/wetland
Fort Drum, New York	Swamp/wetland, forest, open woodland, grassland/prairie
Fort Hood, Texas	Open woodland/savanna, grassland/prairie, semiarid/steppe
Fort Indiantown Gap, Pennsylvania	Forest
Fort Irwin, California	Mountain, desert
Fort Knox, Kentucky	Forest
Fort Lewis and Yakima Training Center, Washington	Swamp/wetland, forest, desert, open woodland/savanna, mountain, grassland/prairie
Fort McClellan, Alabama	Forest
Orchard Training Area, Idaho	Semiarid steppe
Fort Pickett, Virginia	Forest
Fort Polk, Louisiana	Forest
Fort Riley, Kansas	Forest, grassland/prairie
Camp Shelby, Mississippi	Forest, open woodland/savanna
Fort Sill, Oklahoma	Open woodland/savanna, grassland/prairie
Fort Stewart, Georgia	Swamp/wetland, forest, open woodland/savanna
Puhakuloa Training Center, Hawaii	Mountain, jungle, open woodland/savanna, semiarid steppe
Fort Wainwright, Alaska	Mountain, swamp/wetland, arctic, forest, open woodland

Table C-2
Installations' Priority for ITAM Resources

Category 1: Installations that have an Army-wide strategic and enduring training mission capability. **Tier 1**: Major Training installations with strategic training value to the Army: – Fort Irwin, Fort Bliss, Fort Polk, Fort Bragg, Fort Benning, Fort Hood, Fort Stewart, Fort Rucker, Fort Sill, Fort Campbell, Fort Pickett, Fort Riley, Fort Lewis, Fort Carson, Fort McCoy, Camp Shelby, and Camp Roberts.
Category 1, Tier 2: Installations with significant training value to MACOMs and having high range and land capability – Fort Leonard Wood, Camp Atterbury, Fort Drum, Fort Chaffee, Fort Eustis, Fort A.P. Hill, Fort Know, Aberdeen Proving Grounds, Fort Dix, Fort Hunter Liggett, White Sands Missile Range, Yuma Proving Grounds, Orchard Training Area, Camp Grayling, Camp Ripley.
Category 1, Tier 3: Installations with range and land capability, and training value to MACOMs – Dugway Dugway Proving Grounds, Camp Santiago, Camp Beauregard, Fort McClellan, Fort Huachuca, McReady Training Area, Camp Blanding, Camp Robinson, Camp Ethan Allen, Camp Edwards, Camp Rilea, Camp Grafton, Fort Indiantown Gap, Camp Gruber, Fort Jackson, Milan Training Area, Camp Guernsey, Camp Swift, Fort Harrison (Limestone Hills), Camp Williams, Fort Lee, and Camp Bullis**.**
Category 2: Installations with limited mission capabilities that provide training opportunities to local commanders. **Tier 4**: Training Areas with value to local commanders and have a limited collective range and training land capability and **Tier 5**: Local Training Areas, with time-distance value, that support small unit training of RC units – All remaining installations.

Source: NGB, 2004.

Table C-3
Maneuver Land Requirements

Unit	Task	Box Size (km)	Required Land (km^2)	Days per Event	Annual Events
Mechanized Infantry or Armored Battalion	Movement to Contact	8x31	248	1	4
	Offensive Ops	4x17	68	1	4
	Defensive Ops	6x23	138	1	4
	Retrograde	6x23	138	1	4
			592 km^2 (146,283 acres)		
Mechanized Infantry Company	Movement to Contact	6x14	84	1	3
	Attack	5x10	50	1	3
	Raid	5x10	50	2	3
	Ambush	5x10	50	2	3
	Defend	3x8	24	2	3
	Retrograde	6x17	102	2	3
	Recon & Security	13x6	78	2	3
			438 km^2 (108,230 acres)		
Light Infantry Battalion	Attack	13x16 km	208	1	4
	Defend	8x8 km	64	1	4
	Movement to Contact	19x14 km	266	1	4
	Recon & Security	20x20 km	400	1	4
			938 km^2 (231,780 acres)		
Light Infantry Rifle Company	Movement to Contact	7x10 km	70	2	4
	Attack	6x8 km	48	2	4
	Defend	4x4 km	16	2	4
	Recon & Security	6x8 km	48	2	4
	Raid	6x8 km	48	2	4
	Ambush	6x8 km	48	2	4
			278 km^2 (68,694 acres)		

Source: Training Circular 25-1 (1991).

Table C-4
Largest Army and ARNG Installations

Installation	Major Command	Acreage
Aberdeen Proving Ground, MD	AMC	72,406
Camp Atterbury, IN	ARNG	33,139
Fort Benning, GA	TRADOC	171,873
Camp Blanding, FL	ARNG	72,000
Fort Bliss, TX	TRADOC	131,043
Fort Bragg, NC	FORSCOM	152,922
Fort Campbell, KY	FORSCOM	36,596
Fort Carson, CO	FORSCOM	137,404
Fort Chaffee, AR *	ARNG	64,272
Fort Dix, NJ	USAR	30,943
Fort Drum, NY	FORSCOM	107,648
Dugway Proving Ground, UT	AMC	798,855
Fort Gordon, GA	TRADOC	55,597
Gowen Field, ID	ARNG	570
Camp Grayling, MI	ARNG	146,750

Table C-4
Largest Army and ARNG Installations (continued)

Installation	Major Command	Acreage
Fort Greely, AK	USARPAC	16,905
Camp Gruber, OK	ARNG	33,027
Hawthorne Army Depot, NV	AMC	147,236
Fort A.P. Hill, VA	MDW	75,905
Fort Hood, TX	FORSCOM	214,621
Fort Huachuca, AZ	TRADOC	73,323
Fort Hunter Liggett, CA	USAR	164,272
Fort Irwin, CA	FORSCOM	636,250
Fort Jackson, SC	TRADOC	52,301
Fort Lewis, WA	FORSCOM	85,985
Fort McClellan, AL *	ARNG	36,310
Fort McCoy, WI	USAR	127,730
Fort Pickett, VA *	ARNG	42,276
Pinon Canyon Maneuver Site, CO	FORSCOM	235,896
Fort Polk, LA	FORSCOM	198,721
Pohakuloa Training Center, HI	USARPAC	108,792
Fort Richardson, AK	USARPAC	71,441
Fort Riley, KS	FORSCOM	100,656
Camp Ripley, MN	ARNG	53,000
Camp Roberts, CA	ARNG	42,362
Camp Robinson, AR	ARNG	32,814
Fort Rucker, AL	TRADOC	59,460
Schofield Barracks, HA	USARPAC	16,676
Camp Shelby, MS	ARNG	133,042
Fort Sill, OK	TRADOC	93,831
Fort Stewart, GA	FORSCOM	279,271
Fort Wainwright, AK	USARPAC	656,241
White Sands Missile Range, NM	AMC	3,640,413
Fort Leonard Wood, MO	TRADOC	53,225
Yakima Training Center, WA	FORSCOM	316,786
Yuma Proving Ground, AZ	AMC	1,008,898
Total Acreage		**10,819,684**

Source: *DoD Base Structure Report for Fiscal Year 2003*, Office of the Deputy Under Secretary of Defense (Installations & Environment).

Table C-5
Army Principal Installations and Other Sites, By State

	Principal Installations				Other Sites[1]
State/Territory	Number	Bldgs Owned	Bldg Sq Ft	Total Acres	Number
Alabama	27	6,238	34,958,533	208,472	170
Alaska	14	1,664	17,677,118	3,004,770	108
Arizona	7	2,553	10,936,568	1,169,358	37
Arkansas	6	1,974	9,259,044	118,077	85
California	31	8,740	52,293,453	971,991	167
Colorado	10	52	688,400	447	39
Connecticut	8	294	3,844,534	2,594	31
Delaware	4	155	872,339	575	15
District of Columbia	2	133	6,435,853	227	4
Florida	10	899	3,952,366	73,486	92

Table C-5
Army Principal Installations and Other Sites, By State (continued)

State/Territory	Principal Installations				Other Sites[1]
	Number	Bldgs Owned	Bldg Sq Ft	Total Acres	Number
Georgia	16	7,177	53,079,283	520,995	92
Hawaii	21	3,974	28,51,835	175,894	24
Idaho [a]	4	158	977,713	216,972	44
Illinois	23	1,968	18,197,748	26,234	75
Indiana	7	4,182	17,950,973	110,024	100
Iowa	8	1,489	6,934,720	50,080	70
Kansas	13	4,126	30,725,577	134,596	94
Kentucky	7	5,403	33,354,991	162,433	83
Louisiana	8	3,817	20,789,764	231,633	79
Maine	4	201	1,383,159	729,051	35
Maryland	18	3,555	29,486,853	85,537	53
Massachusetts	11	566	5,865,957	23,529	76
Michigan	11	1,299	8,041,411	156,637	74
Minnesota [a]	5	1,696	8,234,675	4,925	92
Mississippi	7	1,362	7,221,840	151,076	112
Missouri	14	3,035	19,485,825	86,625	98
Montana	6	225	1,596,478	32,604	39
Nebraska	7	899	3,572,185	14,220	43
Nevada	7	2,869	11,119,393	159,667	12
New Hampshire	4	100	945,470	497	25
New Jersey	20	2,943	24,321,486	48,494	39
New Mexico	5	3,098	9,774,147	4,670,855	44
New York	32	4,325	36,281,085	138,975	95
North Carolina	8	4,796	32,244,510	1,504,485	149
North Dakota	8	636	2,641,159	14,781	45
Ohio	17	2,119	15,286,705	46,501	97
Oklahoma	11	4,791	26,602,201	173,600	121
Oregon	7	1,618	6,065,290	56,510	57
Pennsylvania	18	2,833	26,841,644	42,640	177
Rhode Island	2	140	901,377	602	23
South Carolina	8	1,582	12,627,466	69,408	109
South Dakota	5	252	1,312,372	4,302	52
Tennessee	15	4,402	25,019,868	117,278	110
Texas	30	9,946	66,664,276	465,291	153
Utah	12	2,536	15,562,877	868,084	38
Vermont	4	166	992,002	12,081	29
Virginia	17	6,500	47,454,469	156,366	71
Washington	13	2,117	17,993,169	613,346	50
West Virginia	4	218	2,664,274	3,036	63
Wisconsin	8	2,767	12,658,896	138,929	108
Wyoming	3	161	807,221	42,861	20
Totals	**567**	**119,464**	**755,660,104**	**15,104,882**	**3718**

[1] "Other Sites" are locations of less than 10 acres in size and less than $10 million in plant replacement value.
Information included: Building data reflect all types of facilities (e.g., administrative, classroom, medical, residential, storage, warehousing, maintenance). Acreage data identify the total number of acres occupied by the Army, including public land, state land, and land controlled by other federal agencies.
Source: *DoD Base Structure Report for Fiscal Year 2003*, Office of the Deputy Under Secretary of Defense (Installations & Environment).

Table C-6
Selected Principal ARNG Training Areas

State	Site	City	Acreage
Alabama	Fort McClellan	Anniston	22,531
Alabama	Fort Rucker Training Site	Ozark	14,751
Alaska	Camp Carroll Major Training Area	Anchorage	61,552
Arizona	Camp Navajo	Bellemont	28,345
Arizona	Papago Park Military Reservation	Phoenix	451
Arkansas	Fort Chaffee	Fort Smith	64,272
Arkansas	Camp Robinson Major Training Area	North Little Rock	32,814
California	Camp Roberts Major Training Area	San Miguel	42,362
California	Camp San Luis Obispo Major Training Area	San Luis Obispo	4,100
California	Los Alamitos Training Site	Los Alamitos	2,676
Colorado	Fort Carson Major Training Area	Colorado Springs	195
Connecticut	Camp Hartell Training Site	Windsor Locks	59
Connecticut	Camp Rell Major Training Area	Niantic	82
Connecticut	Stones Ranch Military Reservation	East Lyme	1,862
Delaware	Bethany Beach Training Site	Bethany Beach	194
Delaware	New Castle Training Site	New Castle	227
Florida	Camp Blanding Major Training Center	Starke	72,000
Georgia	Catoosa Training Site	Tunnel Hill	1,627
Hawaii	Fort Ruger	Honolulu	73
Hawaii	Kalaeloa	Kapolei	153
Hawaii	Keaukaha Military Reservation	Hilo	509
Idaho	Gowen Field Major Training Area	Boise	570
Idaho	Orchard Training Site	Boise	138,551
Illinois	Camp Lincoln	Springfield	160
Illinois	Marseilles Major Training Area	Marseilles	2,815
Indiana	Camp Atterbury Major Training Area	Edinburgh	33,139
Iowa	Camp Dodge Training Site	Johnson	30,440
Kansas	Camp Funston	Junction City	156
Kentucky	Artemus Training Site	Barbourville	1,000
Kentucky	Eastern Training Site	Winchester	650
Kentucky	Fort Knox Armory	Fort Knox	120
Kentucky	Western Kentucky Training Site	Greenville	5,200
Louisiana	Camp Minden	Minden	13,665
Louisiana	Jackson Barracks	New Orleans	113
Louisiana	Camp Villere Major Training Area	Slidell	3,414
Louisiana	Camp Beauregard Major Training Area	Pineville	728
Maine	Deepwoods Major Training Area	Old Town	711,000
Maine	Riley-Bog Brook Major Training Area	Bethel	10,000
Maine	Caswell Training Site	Caribou	860
Maine	Hollis Plains Training Site	Buxton	425
Maryland	Edgewood Area	Aberdeen	140
Maryland	Camp Fretterd	Reisterstown	592
Maryland	Gunpowder Military Major Training Area	Glen Arm	240
Massachusetts	Camp Curtis Guild Major Training Area	Reading	680
Massachusetts	Camp Edwards Major Training Area	Bourne	14,712
Michigan	Camp Grayling Major Training Area	Grayling	146,750
Michigan	Fort Custer Training Center	Battle Creek	7,570
Minnesota	Arden Hill Army Training Site	Arden Hills	1,245
Minnesota	Camp Ripley	Little Falls	53,000
Mississippi	Camp Shelby Major Training Area	Hattiesburg	133,042
Mississippi	Camp McCain	Elliott	13,020

Table C-6
Selected Principal ARNG Training Areas (continued)

State	Site	City	Acreage
Missouri	Camp Clark Major Training Area	Nevada	2,574
Missouri	Camp Crowder Major Training Area	Neosho	4,362
Missouri	Ike Skelton Training Site	Jefferson City	770
Montana	Fort Harrison Major Training Area	Helena	6,150
Montana	Limestone Hills Major Training Area	Townsend	21,360
Nebraska	Camp Ashland Major Training Area	Ashland	980
Nebraska	Hastings Major Training Area	Hastings	3,211
Nebraska	Mead Major Training Area	Mead	1,197
Nevada	Clark County Complex	North Las Vegas	3,984
Nevada	Stead Major Training Area	Reno-Stead	395
New Hampshire	New Hampshire Training Site	Center Strafford	105
New Jersey	Sea Girt Major Training Area	Sea Girt	277
New Jersey	Fort Dix Training Site	Wrightstown	94
New Mexico	Onate Complex Training Site	Santa Fe	313
New Mexico	Roswell Local Training Area	Roswell	5,500
New York	Camp Smith Major Training Area	Cortlandt	1,614
New York	Youngstown Weekend Training Site	Youngstown	860
North Carolina	Camp Butner Training Aite	Butner	4,734
North Carolina	Fort Fisher Major Training Area	Kure Beach	18
North Dakota	Camp Grafton Major Training Area	Devils Lake	10,677
Ohio	Camp Perry Major Training Site	Port Clinton	640
Ohio	Hawk McConnelsville Training Site	McConnelsville	444
Ohio	Ravenna Training and Logistics Site	Newton Falls	41,358
Ohio	Rickenbacker Major Training Area	Columbus	126
Oregon	Biak Training Center	Redmond	31,427
Oregon	Camp Rilea Major Training Area	Warrenton	1,876
Oregon	Camp Withycombe	Clackamas	234
Pennsylvania	Fort Indiantown Gap Training Site	Annville	17,797
Puerto Rico	Fort Allen	Juana Diaz	776
Puerto Rico	Camp Santiago Major Training Area	Salinas	11,300
Rhode Island	Camp Fogerty Training Site	East Greenwich	374
South Carolina	Clarks Hill Major Training Area	McCormick	896
South Carolina	McCrady Major Training Area	Eastover	15,115
South Dakota	Fort Meade	Fort Meade	785
South Dakota	Camp Rapid Major Training Area	Rapid City	1,031
South Dakota	Mitchell Training Site	Mitchell	174
Tennessee	Catoosa Training Center	Tunnel Hill	1,600
Tennessee	Milan Major Training Area	Milan	2,557
Tennessee	Tullahoma Major Training Area	Tullahoma	6,700
Texas	Camp Bowie Major Training Area	Brownwood	4,895
Texas	Camp Mabry Training Site	Austin	376
Texas	Camp Maxey Major Training Area	Powderly	6,424
Texas	Camp Swift Major Training Area	Bastrop	11,662
Texas	Fort Wolters	Mineral Wells	3,989
Utah	Camp Williams Major Training Area	Riverton	20,904
Vermont	Camp Johnston Training Site	Burlington	64
Vermont	Ethan Allen Major Training Area	Colchester	667
Vermont	Ethan Allen Range	Jericho	11,219
Virginia	Byrd Field Training Site	Sandston	185
Virginia	Camp Pendleton Major Training Area	Virginia Beach	348
Virginia	Fort Pickett Major Training Center	Blackstone	42,276
West Virginia	Camp Dawson Major Training Area	Kingwood	2,225

Table C-6
Selected Principal ARNG Training Areas (continued)

State	Site	City	Acreage
Wisconsin	Camp Williams Major Training Area	Tomah	50
Wisconsin	Fort McCoy Training Site	Sparta	97
Wyoming	Camp Guernsey Major Training Area	Guernsey	33,752
		Total	**2,018,150**

Table C-7
Currently Designated Nonattainment Areas for Criteria Pollutants

Installation	State	County/Counties	Nonattainment Area Pollutants
Fort Benning	GA	Muscogee and Chatahoochee in GA; Russell in AL	Attainment
Camp Blanding	FL	Clay	Attainment
Fort Bliss	TX	El Paso and Hudspeth in TX; Otero and Dina Ana in NM	El Paso Co. – carbon monoxide, ozone, PM-10; Dona Ana Co. – ozone, PM-10
Fort Bragg	NC	Cumberland	ozone
Fort Campbell	KY	Christian and Trigg in KY; Montgomery and Stewart in TN	Trigg Co. and Stewart Co. – Attainment Christian Co. and Montgomery Co. – ozone
Fort Carson/Pinon Canyon Maneuver Site (PCMS)	CO	El Paso, Pueblo, Fremont/Las Animas	Attainment
Fort Drum	NY	Jefferson	ozone
Fort Hood	TX	Coryell, Bell	Attainment
Fort Irwin	CA	San Bernardino	carbon monoxide, ozone, PM-10
Fort Knox	KY	Meade, Bullitt, Hardin	Bullitt Co. – ozone
Fort Lewis/Yakima	WA	Pierce, Thurston	Pierce Co. – PM-10
Orchard Training Area	ID	Elmore, Ada	Attainment
Fort Polk	LA	Vernon, Rapides, and Beauregard Parishes	Attainment
Fort Riley	KS	Riley, Geary, Clay	Attainment
Camp Shelby	MS	Forrest	Attainment
Fort Sill	OK	Comanche	Attainment
Fort Stewart	GA	Liberty	Attainment
Schofield Barracks	HI	Honolulu	Attainment
Fort Wainwright/ Richardson	AK	North Star Borough (Fairbanks)	Attainment
Fort Dix	NJ	Burlington	ozone
Fort McClellan	AL	Calhoun	Attainment
Fort Pickett	VA	Nottoway	Attainment
Fort Chaffee	AR	Sebastian, Logan, Franklin, Crawford	Attainment
Fort A.P. Hill	VA	Caroline	Attainment

Note: PM-10 = particulate matter less than 10 microns in diameter.
Source: http://www.epa.gov/oar/oaqps/greenbk/ancl.html.

Table C-8
Noise Level Zones and Annoyance

Noise Zone	Population Highly Annoyed	Transportation Noise (ADNL)	Small Arms Noise (ADNL)	Impulsive Noise (CDNL)
Zone I	< 15%	< 65 dBA	< 65 dBA	< 62 dBA
Zone II	15%–39%	65–75 dBA	65–75 dBA	62–70 dBA
Zone III	> 39%	> 75 dBA	> 75 dBA	> 70 dBA

Table C-9
Army and ARNG Installations and Corresponding Ecoregion Provinces

Installation	State	Ecoregion Province
Fort A.P. Hill	VA	Outer Coastal Plain Mixed Forest
Fort Benning	GA	Southeastern Mixed Forest
Camp Blanding	FL	Outer Coastal Plain Mixed Forest
Fort Bliss	TX	Chihuahuan Desert Province
Fort Bragg	NC	Outer Coastal Plain Mixed Forest
Fort Campbell	KY	Eastern Broadleaf Forest (Continental)
Fort Carson	CO	Great Plains-Palouse Dry Steppe
Fort Carson/Pinon Canyon	CO	Great Plains-Palouse Dry Steppe
Fort Chaffee	AR	Eastern Broadleaf Forest (Continental)
FIG/Dix	NJ	Eastern Broadleaf Forest (Continental)
Fort Drum	NY	Eastern Broadleaf Forest (Continental)
Fort Hood	TX	Southwest Plateau and Plains Dry Steppe and Shrub
Fort Irwin	CA	American Semi-Desert and Desert
Fort Knox	KY	Eastern Broadleaf Forest (Continental)
Fort Lewis	WA	Pacific Lowland Mixed Forest
Fort Lewis/Yakima	WA	Intermountain Semi-Desert
Fort McClellan	AL	Southeastern Mixed Forest
Orchard Training Area	ID	Intermountain Semi-Desert
Fort Pickett	VA	Southeastern Mixed Forest
Fort Polk	LA	Outer Coastal Plain Mixed Forest
Fort Riley	KS	Prairie Parkland (Temperate)/Great Plains Steppe
Camp Shelby	MS	Outer Coastal Plain Mixed Forest
Fort Sill	OK	Great Plains Steppe and Shrub
Fort Stewart	GA	Outer Coastal Plain Mixed Forest
Schofield Barracks	HI	Hawaiian Islands
Schofield Barracks/Pohakuloa	HI	Hawaiian Islands
Fort Wainwright/Fort Richardson	AK	Coastal Trough Humid Tayga

Table C-10
Soil Types

Entisols	Soils with little or no evidence of soil formation. Either young soils or their parent material has not yet reacted to soil forming factors. They may be formed on fresh lava flows or recent alluvium for which there has been too little time for soil formations to take place. They are found in extremely dry areas where too little water and vegetation prevents soil formation, or on steep slopes where the rates of erosion may be greater than the rate of soil formations, thereby preventing horizon development. Management needs vary depending on climate and topography, but in most cases they are subject to erodibility and should be maintained with natural vegetation.
Aridisols	Dry soils. Aridisols are characterized by a subsurface accumulation of salts (calcium carbonate, gypsum, other soluble salts, or sodium). Overgrazed aridisols are often left bare and are subject to wind erosion. Found in the western United States.
Alfisols	Developed under forests in cool to warm humid areas and are characterized by a subsurface horizon in which a silicate clay has accumulated. They are often found on sloping to steep land and are susceptible to soil erosion.
Mollisols	Dark soils of grasslands. High organic matter. Productive agricultural soils. Management issues deal with use of fertilizers and maintaining a crop cover to prevent erosion.
Ultisols	Developed primarily in forested, humid tropical, and subtropical areas, found in the southeastern United States. In some ultisols the topsoil has been eroded. Soil conservation practices are needed to prevent further soil deterioration. In areas with significant slope, land must be revegetated.
Oxisols	Highly weathered soils, found mostly in tropical areas. An easily recognized subsurface layer of iron and aluminum may be evident.
Inceptisols	Early stages of soil profile development, after entisols. Management varies depending on climate and topography.
Spodosols	Acid, sandy, forest soils. Characteristic of cold, moist to wet climates. Because they drain well, they are not as susceptible to erosion as more finely textured soils. The presence of a forest cover can help to moderate peak stream flows.
Vertisols	High content of sticky or swelling and shrinking type clays to a depth of 1 meter or more. In dry seasons, these soils develop deep wide cracks that are diagnostic for this soil order. Also typical is an uneven surface with micro-basins and knolls. Found most frequently in sub-humid to semiarid environments. High erodibility.

Table C-11
Status of Integrated Natural Resources Management Plans

State	Site	INRMP Completion	Planned Revision Date
Alabama	Fort McClellan	November 2001	4th Qtr, FY 2005
Alaska	Stewart River Training Site	August 2001*	4th Qtr, FY 2005
Arkansas	Fort Chafee	November 2001	1st Qtr, FY 2006
Arkansas	Camp Robinson	October 2001	1st Qtr, FY 2006
Arizona	Camp Navajo	November 2001	4th Qtr, FY 2005
Arizona	Florence Military Reservation	November 2001	4th Qtr, FY 2005
California	Camp Roberts	November 2001	October 2006
California	Camp San Luis Obispo	November 2001*	October 2006
California	Santa Cruz Armory	None to date	4th Qtr, FY 2005
Connecticut	Stones Ranch	November 2001*	2006
Connecticut	Camp Hartell	November 2001*	
Connecticut	Camp Rowland	November 2001*	
Connecticut	East Haven Rifle Range	November 2001*	2006
Delaware	New Castle Rifle Range	October 2001	4th Qtr, FY 2005
Delaware	Bethany Beach	October 2001*	4th Qtr, FY 2005

Table C-11
Status of Integrated Natural Resources Management Plans (continued)

State	Site	INRMP Completion	Planned Revision Date
Florida	Camp Blanding	March 2001	4th Qtr, FY 2004
Florida	Snake Creek Training Area	None to date	2nd Qtr, FY 2006
Hawaii	Waiawa Unit Training and Equipment Site	November 2001	
Hawaii	Ukumehame Weekend Training Site	November 2001*	October 2005
Hawaii	Kekaha Weekend Training Site	November 2001*	October 2005
Hawaii	Keaukaha Military Reservation	November 2001*	October 2005
Idaho	Orchard Training Area	April 1997*	October 2004
Illinois	Marseilles Training Area	November 2001*	3rd Qtr, FY 2005
Illinois	Sparta Training Center	None to date	2nd Qtr, FY 2006
Indiana	Camp Atterbury	October 2001	4th Qtr, FY 2005
Iowa	Camp Dodge	November 2001	1st Qtr, FY 2006
Kansas	Smokey Hill	November 2001	4th Qtr, FY 2006
Kentucky	Artemus	September 1998	3rd Qtr, FY 2007
Kentucky	Wendell Ford Training Center	September 1998*	3rd Qtr, FY 2007
Kentucky	Eastern Kentucky Training Site	September 1998*	3rd Qtr, FY 2007
Louisiana	Camp Beauregard	November 2001	4th Qtr, FY 2005
Louisiana	Camp Minden	October 2001	4th Qtr, FY 2005
Louisiana	Camp Villere	November 2001*	4th Qtr, FY 2005
Maine	Bog Brook Training Facility	October 2001	4th Qtr, FY 2005
Maine	Caswell-Loring Training Facility	October 2001	4th Qtr, FY 2005
Maine	Hollis Training Site	None to date	2nd Qtr, FY 2006
Maine	Plymouth Training Site	None to date	2nd Qtr, FY 2006
Maryland	BG Thomas B. Baker	November 2001*	4th Qtr, FY 2005
Massachusetts	Camp Curtis Guild	None to date	3rd Qtr, FY 2006
Massachusetts	Camp Edwards	November 2001	3rd Qtr, FY 2006
Michigan	Fort Custer	October 2001	4th Qtr, FY 2006
Michigan	Camp Grayling	November 2001*	1st Qtr, FY 2005
Minnesota	Arden Hills Army Training Site	October 2001	January 2005
Minnesota	Camp Ripley	February 2001	1st Qtr, FY 2007
Mississippi	Camp Shelby	November 2001	4th Qtr, FY 2006
Mississippi	Camp McCain	November 2001	4th Qtr, FY 2006
Missouri	Truman Training Site	November 2001	November 2004
Missouri	Camp Clark	November 2001	November 2005
Missouri	Camp Crowder	November 2001	November 2005
Missouri	Macon Training Site	November 2001*	June 2005
Missouri	Wappapello Training Site	November 2001*	November 2004
Montana	Limestone Hills	October 2001*	October 2006
Montana	Fort Harrison	October 2001	October 2006
Nebraska	Camp Ashland	November 2001	July 2005
Nebraska	Greenlief Training Site (Hastings)	November 2001	July 2005
Nebraska	Mead	November 2001	July 2006
Nevada	Stead	September 2001	
New Jersey	Sea Girt Training site	None to date	December 2004
New Mexico	Roswell	November 2001	1st Qtr, FY 2005
New Mexico	Camel Tracks	November 2001	1st Qtr, FY 2005
New Mexico	Carlsbad Training Site	November 2001	1st Qtr, FY 2005
New Mexico	Deming Training Site	November 2001	1st Qtr, FY 2005
New York	Guilderland Local Training Area	October 2001	1st Qtr, FY 2006
New York	Youngstown Weekend Training Site	October 2001	1st Qtr, FY 2006
New York	Camp Smith	October 2001*	1st Qtr, FY 2006

Table C-11
Status of Integrated Natural Resources Management Plans (continued)

State	Site	INRMP Completion	Planned Revision Date
North Carolina	Camp Butner	October 2001	1st Qtr, FY 2006
North Dakota	Garrison Training Site	November 2001	3rd Qtr, FY 2005
North Dakota	Camp Davis Training Area	None to date	3rd Qtr, FY 2005
North Dakota	Williston Weekend Training Site	None to date	3rd Qtr, FY 2005
North Dakota	Camp Grafton	November 2001*	3rd Qtr, FY 2005
Ohio	Ravenna Training and Logistics Site	November 2001	
Oklahoma	Camp Gruber	November 1997	September 2004
Oregon	Camp Adair	September 2001	1st Qtr, FY 2006
Oregon	Biak Training Center	November 2001	1st Qtr, FY 2006
Oregon	Camp Rilea	July 2001	1st Qtr, FY 2006
Pennsylvania	Fort Indiantown Gap	July 2002	
Puerto Rico	Camp Santiago		4th Qtr, FY 2005
Rhode Island	Camp Fogarty Training Site	November 2001	4th Qtr, FY 2005
South Carolina	McCrady Training Center	November 2001	4th Qtr, FY 2005
South Carolina	Clark's Hill Training Center	November 2001	4th Qtr, FY 2005
South Dakota	Austin Training Site	None to date	4th Qtr, FY 2005
South Dakota	West Camp Rapid	August 2001*	October 2005
Tennessee	Tullahoma Training Site	November 2001	January 2005
Tennessee	Catoosa Training Site	October 2001	
Tennessee	Grubbs Kyle	November 2001	
Tennessee	Milan Training Site	November 2001	April 2005
Texas	Fort Wolters	November 2001	1st Qtr, FY 2006
Texas	Camp Bowie	November 2001	1st Qtr, FY 2006
Texas	Camp Swift	November 2001	1st Qtr, FY 2006
Texas	Camp Maxey	November 2001*	4th Qtr, FY 2006
Utah	Camp W.G. Williams	November 2001	3rd Qtr, FY 2006
Utah	Saint George Armory	None to date	4th Qtr, FY 2005
Vermont	Ethan Allen	October 2001	
Vermont	Camp Johnson	November 2001	
Virginia	Fort Pickett	October 2001	1st Qtr, FY 2006
Virginia	State Military Reservation – Camp Pendleton	None to date	1st Qtr, FY 2006
Washington	Camp Murray	None to date	2006
West Virginia	Camp Dawson	November 2001	1st Qtr, FY 2006
Wisconsin	Camp Wismer Training Site	October 2001	
Wyoming	Camp Guernsey	September 2001	4th Qtr, FY 2005
Wyoming	Lander Training Site	September 2001	4th Qtr, FY 2005
Wyoming	Lovell Training Site	September 2001	4th Qtr, FY 2006
Wyoming	Sheridan Training Site	September 2001	4th Qtr, FY 2006

* Denotes INRMP prepared at discretion of NGB.
Source: NGB 2004.

Table C-12
Regional Locations of Representative Installations

Installation	State	Archaeological Region
Fort Benning	GA	Southeast
Camp Blanding	FL	Southeast
Fort Bliss	TX	Southwest
Fort Bragg	NC	Southeast
Fort Campbell	KY	Southeast
Fort Carson	CO	West
Fort Chaffee	AR	Southeast
Fort Dix	NJ	Mid-Atlantic
Fort Drum	NY	Mid-Atlantic/Northeast
Fort A.P. Hill	VA	Mid-Atlantic/Southeast
Fort Hood	TX	Southwest
Fort Indiantown Gap	PA	Mid-Atlantic
Fort Irwin	CA	West
Fort Knox	KY	South
Fort Lewis	WA	Northwest
Fort McClellan	AL	Southeast
Orchard Training Area	ID	Northwest
Fort Pickett	VA	Mid-Atlantic/Southeast
Fort Polk	LA	Southeast
Fort Riley	KS	Midwest/West
Camp Shelby	MS	Southeast
Fort Sill	OK	West
Fort Stewart	GA	Southeast
Schofield Barracks	HI	Pacific
Fort Wainwright	AK	Far Northwest

Table C-13
Status of Integrated Cultural Resources Management Plans

State	Date Plan Completed	Fiscal Year for Plan Revision
Alabama	October 2002	2005
Alaska	April 2002	2007
Arkansas	February 2002	2006
Arizona	In process	2010
California	In process	2010
Colorado	exempt	exempt
Connecticut	April 2002	2006
Delaware	August 2002	2005
Florida	August 2002	2005
Georgia	In process	2010
Hawaii	In process	2010
Idaho	October 2002	2008
Illinois	June 2002	2007
Indiana	May 2003	2008
Iowa	January 2002	2007
Kansas	August 2002	2007
Kentucky	August 2003	2007
Louisiana	April 2003	2008
Maine	July 2003	2006

Table C-13
Status of Integrated Cultural Resources Management Plans (continued)

State	Date Plan Completed	Fiscal Year for Plan Revision
Maryland	March 2003	2006
Massachusetts	September 2002	2006
Michigan	January 2002	2006
Minnesota	February 2002	2007
Mississippi	September 2001	2005
Missouri	December 2001	2007
Montana	August 2003	2007
Nebraska	In process	2008
Nevada	exempt	exempt
New Hampshire	October 2001	2006
New Mexico	April 2002	2007
New York	July 2004	2009
New Jersey	August 2002	2007
North Carolina	October 2001	2005
North Dakota	August 2003	2008
Ohio	May 2003	2006
Oklahoma	In process	2010
Oregon	December 2001	2007
Pennsylvania	February 2002	2006
Puerto Rico	January 2003	2007
Rhode Island	March 2003	2006
South Carolina	November 2003	2008
South Dakota	October 2002	2007
Tennessee	June 2004	2009
Texas	August 2002	2007
Utah	February 2002	2007
Vermont	November 2001	2006
Virgin Islands	March 2002	2005
Virginia	September 2002	2006
Washington	In process	2010
West Virginia	August 2002	2006
Wisconsin	October 2002	2006
Wyoming	In process	2009

Source: NGB 2004

This page intentionally left blank.

ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
ADNL	A-weighted day-night average sound level
ADRS	Army National Guard Division Redesign Study
AHPA	Archaeological and Historic Preservation Act of 1974
AIRFA	American Indian Religious Freedom Act
AR	Army Regulation
ARNG	Army National Guard
ARPA	Archaeological Protection Act of 1979
ARTEP	Army Readiness and Training Evaluation Program
ATTACC	Army Training and Testing Area Carrying Capacity
BCT(UA)	brigade combat team unit of action
BMP	best management practice
CAA	Clean Air Act
CALFEX	Combined Arms Live-Fire Exercise
CDNL	C-weighted day-night average sound level
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CPX	Command Field Exercise
CWA	Clean Water Act
DA PAM	Department of the Army Pamphlet
dB	decibel
DEPLEX	Deployment Exercise
DNL	day-night average sound level
DoD	Department of Defense
DoDI	Department of Defense Instruction
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENMP	Environmental Noise Management Program
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCS	future combat system
FCX	Fire Coordination Exercise
FNSI	Finding of No Significant Impact
FTX	Field Training Exercise
FWS	Fish and Wildlife Service
GIS	geographic information system
GSA	General Services Administration
HAP	hazardous air pollutant
HEMTT	heavy expanded mobility tactical truck

HHC	headquarters and headquarters company
HQDA	Headquarters, Department of the Army
ICRMP	Integrated Cultural Resources Management Plan
INRMP	Integrated Natural Resources Management Plan
ITAM	Integrated Training Area Management
LBP	lead-based paint
LCTA	Land Condition Trend Analysis
LRAM	Land Rehabilitation and Maintenance
MACT	maximum available control technology
MAPEX	Map Exercise
MATES	Mobilization and Training Equipment Sites
MCL	maximum contaminant level
MCLG	maximum contaminant level goal
METL	mission essential task list
MIM	maneuver impact mile
MTOE	Modification Table of Organization and Equipment
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act of 1990
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NGB	National Guard Bureau
NHPA	National Historic Preservation Act of 1966
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PCB	polychlorinated biphenyl
PEA	Programmatic Environmental Assessment
PEIS	Programmatic Environmental Impact Statement
PLS	planning-level survey
POL	petroleum, oil, and lubricant
POTW	publicly owned treatment works
PPA	Pollution Prevention Act of 1990
RCRA	Resource Conservation and Recovery Act
REC	Record of Environmental Consideration
RSTA	reconnaissance, surveillance, and target acquisition
SARA	Superfund Amendments and Reauthorization Act of 1986
SDWA	Safe Drinking Water Act
SEL	sound exposure level
SHPO	state historic preservation officer
SIP	state implementation plan
SUA	support unit of action
TDA	Table of Distribution and Allowances
TES	threatened and endangered species
TEWT	Tactical Exercise Without Troops
TOE	Table of Organization and Equipment

TRI	Training Requirements Integration
TSCA	Toxic Substances Control Act
U.S.C.	United States Code
UAV	unmanned aerial vehicle
UE	unit of employment
UEx	division-level unit of employment
UEy	corps-level unit of employment
UST	underground storage tank
UTES	Unit Training Equipment Sites
UXO	unexploded ordnance
VSF	vehicle severity factor

This page intentionally left blank.